Talkin' spam *Network World* brings together a panel of experts to dissect the new federal anti-spam law. **PAGE 8.**

Got an ID? Microsoft makes a go of it in identity management but faces a spate of challenges. **PAGE 23.**

NetworkWorld

The leader in network knowledge ■ www.nwfusion.com

January 5, 2004 ■ Volume 21, Number 1

Research net set to fly

■ **BY CAROLYN DUFFY MARSAN**

The network research community is building an $80 million nationwide optical network that advocates say is the most ambitious and promising test bed since the creation of Arpanet — the Internet's precursor — in the late 1960s.

Called the National LambdaRail (NLR), the privately funded network will link universities in a dozen U.S. cities with 40 optical wavelengths, each operating at 10G bit/sec. Cisco is providing the multiplexers, switches and routers for the NLR, and Level 3 is supplying the dark fiber.

The first NLR link — from Chicago to Pittsburgh — was lit in November. Additional cities from Washington, D.C., to Seattle are scheduled to be connected by May (see map).

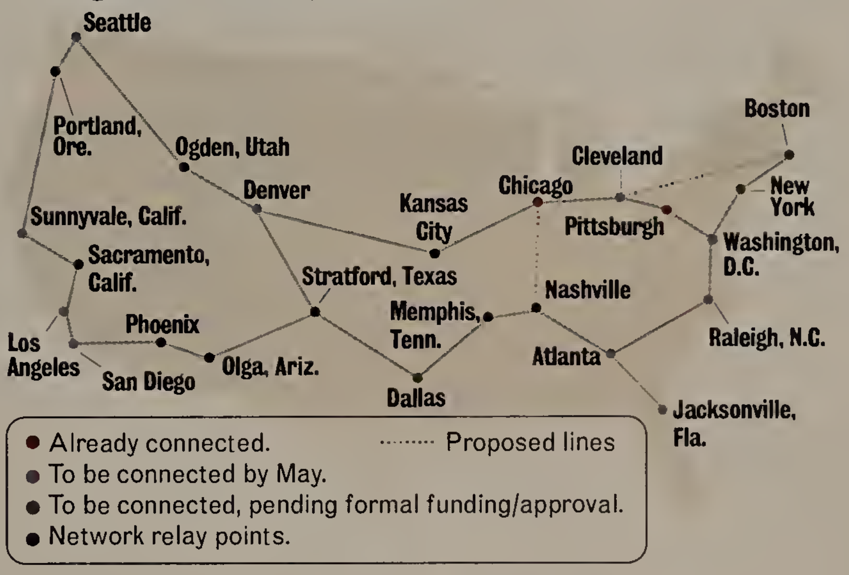
Developments from the NLR could make their way into commercial offerings in as little as 18 to 24 months, participants say. Among the likely products are next-generation protocols, network management tools, rapid provisioning capabilities and security techniques.

NLR is "a giant step forward," says Ron Johnson, vice president of computing and communications in the Office of the Provost at the University of Washington, which is a founding member of the NLR. "The U.S. has lost its lead in Internet innovation. That's likely to be coming from Asia and

See NLR, page 16

National LambdaRail architecture

The $80 million optical network will link universities in about a dozen cities via 10G bit/sec connections by May. The project is dedicated to researching network protocols, network management, security and more.



- ● Already connected.
- ● To be connected by May.
- ● To be connected, pending formal funding/approval.
- ● Network relay points.

········ Proposed lines

DAN VASCONCELLOS

A Wider Net

Talk about legacy machines . . .

One man's junk is another man's treasure; embracing the original Ethernet taps.

■ **BY MICHAEL COONEY**

OK, so it's not exactly an Indiana Jones adventure, but hunting and scavenging around dark, dank basements looking for rare old computer equipment can be pretty challenging.

"You may snicker, but these places can be filled with spiders, snakes and other creepy crawlies so I'm sure to remember to don my leather fedora and strap on my pistols!," says Bruce

See Vintage, page 49

MCI's chief seeks fresh start in '04

MCI will soon shed its Chapter 11 bankruptcy shackles, and that freedom can't come soon enough for Chairman and CEO Michael Capellas. Since taking charge late last year, Capellas has worked nonstop to address questions of solvency. Now his focus is on the future. He spoke recently with Network World *Senior Editor Denise Pappalardo and Associate News Editor Paul McNamara.*

How do you answer critics who argue MCI's punishment hasn't been tough enough?

Who do you blame? The hard-working people who have given great things to the industry every day and brought value to the industry or individuals who did something wrong? You blame the individuals who did something wrong. They should be subject to the maximum penalties of the law and it's up to the legal process to sort that out. The question is whether

See Capellas, page 12

DRAKE SOREY

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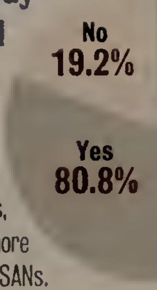
SANity check

Survey says SAN usage is increasing, but unexplained brownouts (application slowdowns) remain a concern. Page 37.

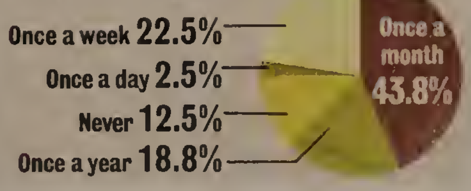
Do you currently have a SAN deployed?



As companies become more comfortable with SANs, they are deploying more and larger SANs.

The brownout blues

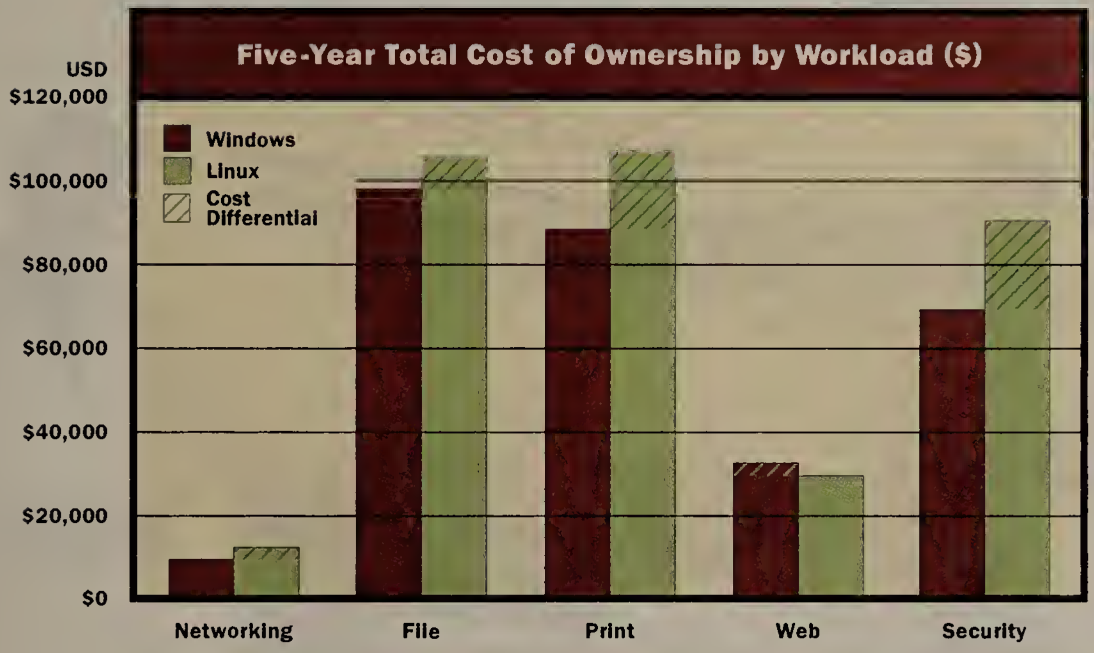
About 70% of companies surveyed experienced a brownout at least once a month.



REAMS HAVE BEEN WRITTEN ABOUT WINDOWS AND LINUX. LET'S SKIP TO THE BOTTOM LINE.

Microsoft

Source: IDC 2002



A recent IDC white paper summarized the five-year cost of ownership of a Linux server environment compared to a Microsoft® Windows® server environment this way: Windows comes out lower in cost in four out of five workloads and 11 to 22 percent lower in cost overall. To get the full study or more third-party findings, visit microsoft.com/getthefacts

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* Results of Buyers Laboratory Inc. Document Feeding Speed tests (originals per minute) in 2:2 mode for Sharp AR-M550 vs. the following manufacturers' competitive models: Canon iR 5000 and 5020, HP 9055 MFP, Konica 7155, Kyocera Mita KM-5530, Ricoh Aficio 1055 and 551, and Toshiba e-STUDIO 550. ©2003 Sharp Corporation

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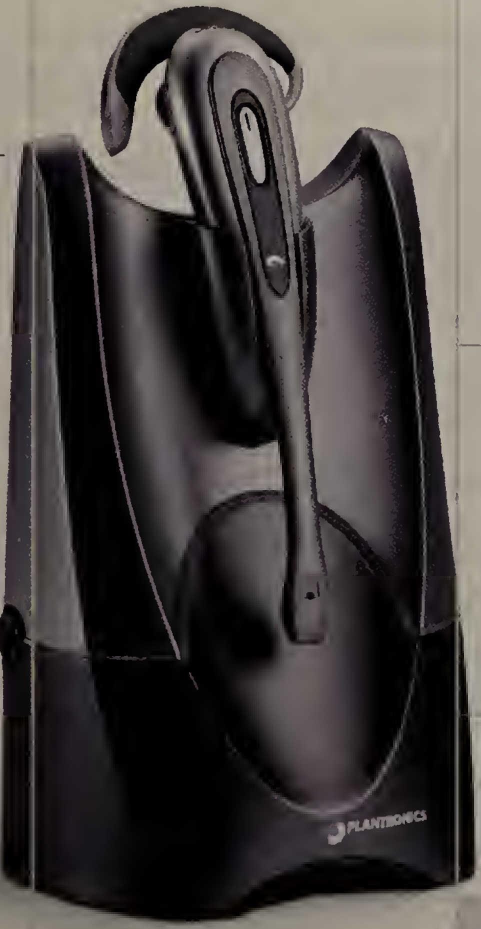

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Switch offers solid performance at excellent price. **Page 39.**

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Interactive

Top ISP Report — November

Is your ISP measuring up? Find out with our Top ISP Report, a joint venture between *Network World* and VeriTest's Internet BenchMark service.
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Survey: Favorite product names

Weird, wild, descriptive, silly — the network industry has many product names that qualify for all of the above. Can you tell a bona fide name from a bogus one?
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Seminars and events

Business now demands more of IT managers

Maximize performance from current applications, optimize usage of available bandwidth and integrate operations with overall business objectives. Here's February's free Network World Technology Tour to the rescue. Attend "Network Management: The New Business Focus," and master the secrets of success. Upcoming sessions are in New York, Atlanta, Chicago and Santa Clara.
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Columnists

Wireless Wizards

Are PDAs worse clients for WLANs than notebooks?
The Wizards help a reader whose new wireless PDAs aren't picking up signals as easily as the old laptops he had been using. Do PDAs have inherently less range than laptops?
DocFinder: 9135

Telework Beat

When you can't work from home, Part 3
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DocFinder: 9136

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Running a business sans Microsoft
Columnist James Gaskin outlines how Intranets.com keeps Linux software developer Partecs running smoothly across languages and time zones. **DocFinder: 9137**

Digital Domicile

What's in store for 2004
Columnist Mike Wolf says there are plenty of choices as first-generation technologies such as VoIP and broadband gateways firm up and enter the mainstream.
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News Bits

Salary deep freeze at AT&T

■ David Dorman, CEO at AT&T, sent out a memo six days before Christmas telling employees there would be no pay raises in 2004. According to an AT&T spokeswoman, market conditions and the fact that raises were issued in September 2003 led the company to delay April 2004 raises until April 2005. AT&T also is expected to cut as many as 8,400 jobs, representing 12% of its workforce. Earlier in 2003 the company speculated it would reduce its workforce by 10%, but the percentage was increased toward the end of the year.

Oracle has cash on hand

■ Oracle has arranged a $1.5 billion credit line for potential use in its bid to acquire rival PeopleSoft, the company said in a recent regulatory filing. Credit Suisse First Boston, ABN Amro Bank NV and other lenders have agreed to provide Oracle with a 364-day $1.5 billion revolving credit line, Oracle said in a filing with the U.S. Securities and Exchange Commission dated Dec. 24, 2003 and posted to the SEC's Web site on Dec. 29, 2003. The money could be used to finance the acquisition of PeopleSoft and related fees and expenses, and for working capital purposes, according to the filing. Oracle already had arranged for a 364-day $5 billion credit facility with CSFB, according to Oracle's Form 10-Q filing in December with the SEC. At the time Oracle said it could increase, decrease or supplement the $5 billion. Oracle launched its offer for PeopleSoft in June, when it submitted a $5.1 billion hostile bid for the rival. Oracle later raised its offer to $19.50 per share, or about $6.2 billion. The offer was pushed up to about $7.5 billion when PeopleSoft issued additional shares in connection with its acquisition of J.D. Edwards, according to the 10-Q filing. The bid for PeopleSoft has essentially been on hold pending a review by U.S. anti-trust regulators. Oracle earlier this month said it gave the U.S. Department of Justice all the documents requested to complete the review and said it expects the department to make its decision on whether the acquisition is anti-competitive early this year.

BMC grabs a little Magic

■ Network Associates has agreed to sell the assets of its Magic help desk and management division to BMC Software for $47 million. BMC said it expects to offer Magic Service Desk and Magic Help Desk after the acquisition is completed, which should occur in approximately two months. Magic Help Desk, which is aimed at small to midsize businesses, is a server-based product for automating and tracking work orders as well as monitoring purchase requests and asset management.

Upgraded FreeBSD set to go

■ FreeBSD.org is expected to formally release Version 5.2 of its open source, Unix-based operating system this week. Scott Long, a member of the FreeBSD release engineering team, says development of this latest version has focused on infrastructure improvements, such as enhancing performance of the network stack. It also provides greater support for Advanced Micro Device's 64-bit processors and open source desktop Gnome 2.4, among other things. The full 5.2 release notes and Early Adopters Guide can be previewed at www.nwfusion.com, DocFinder: 9147.

AOL takes on ISP world

■ AOL is entering the low-priced ISP market with a service under the Netscape name that will be priced at about $10 per month. Customers can get the Netscape unlimited Internet access service for just $1 per month until March 1, according to a registration page on the Web site of AOL, a division of Time Warner. After that, the price will go up to $9.95 per month. The service includes nationwide access, personalized e-mail addresses for customers and a search service powered by Google, according to the site. AOL today offers unlimited dial-up access for $19.95 per month or $199 per year under the CompuServe brand. It also sells a $23.90-per-month unlimited dial-up service that comes with AOL 9.0 Optimized, a collection of enhancements such as e-mail, instant messaging and exclusive content. Those enhancements also are available for $14.95, along with five hours of dial-up access, for customers that buy their own broadband connections. A package with a broadband connection, called the AOL for Broadband-Cable/DSL Plan, costs about $55, according to AOL's Web site.

Microsoft tackles Sarbanes-Oxley

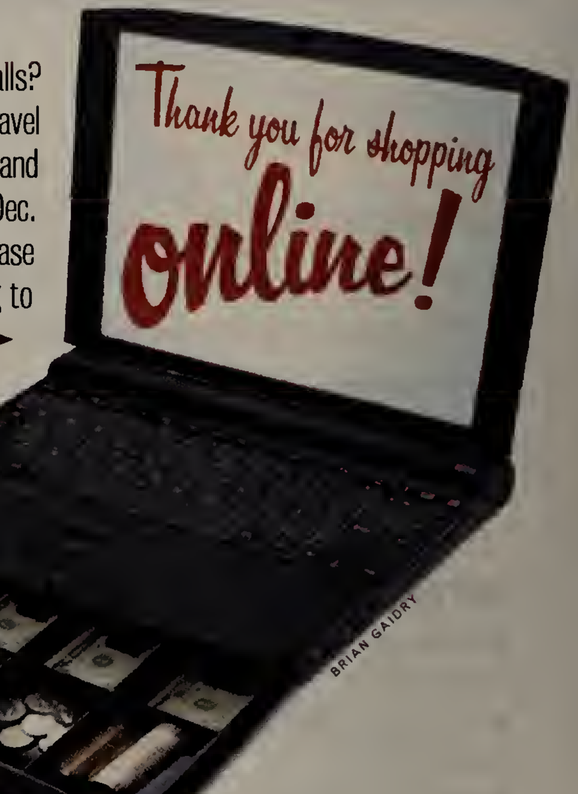
■ Microsoft says it will deliver an add-on for its Office System designed to help companies meet reporting requirements set in the Sarbanes-Oxley Act. The Office Solution Accelerator for Sarbanes-Oxley is due out in March, the company says. It was created with the help of accounting companies and takes advantage of features in Microsoft's Windows SharePoint Services and InfoPath 2003. Microsoft's forthcoming Sarbanes-Oxley Office add-on is designed to help executives monitor financial data within their businesses. It provides functionality in four key areas: document and information management; process automation and workflow; collaboration and communication; and monitoring and reporting. The Sarbanes-Oxley offering, just as Microsoft's other Office Solution Accelerators, will be available at no cost for Microsoft customers with a Software Assurance contract.

Netegrity snaps up Business Layers

■ Computer security provider Netegrity last week acquired Business Layers, which makes provisioning software, for about $42.5 million. Of this amount, $15 million will be paid in cash and about $27.5 million in stock, Netegrity says. Business Layers provides software that lets companies provision applications and services across the enterprise. Netegrity says it plans to integrate Business Layers' technology within the Netegrity identity and access management product, and also will continue to invest in the provisioning technology as a stand-alone product.

■ TheGoodTheBadTheUgly

Cha-ching! Who needs malls? Online retail spending (excluding travel and auctions) during the November and December holiday season through Dec. 26 added up to $11.7 billion, an increase of 29% vs. a year ago, according to market watcher ComScore. ➤


Thank you for shopping online!

BRIAN GAIDRY

See-ya Symbol.
You'd think there would be no better place to be these days than at an established wireless network company. But Symbol Technologies CEO and acting Chairman Richard Bravman stepped down last week, five months after the previous chairman quit amid a Securities and Exchange Commission investigation into improper accounting. The company said it has been under investigation with regard to a transaction in which Bravman and other Symbol employees prematurely recognized $860,000 in revenue in 2001.

Spam gets its due. We're not sure what this says for the rest of network technology, but consulting and research firm Basex has named spam its Product of the Year for 2003 — similar to when *Time* magazine gave its Person of the Year award to notorious political leaders.

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Anti-spam law is a start, panel says

■ BY JEFF CARUSO

STEVEN VOTE

Network World's **recent Spam Forum featured (top, from left): EarthLink's Mary Youngblood; the FTC's Eileen Harrington; Merrill Lynch's Wilson D'Souza; (bottom, from left) Postini's Shinya Akamine; Responsys' David Silver; and SpamCon's Ted Gavin.**

> **"Spam investigations are very resource-intensive."**
>
> **Eileen Harrington**
> Associate director for marketing practices, FTC

NEW YORK — While it's an important first step, the federal anti-spam law signed last December is unlikely to reduce spam noticeably, and companies will have to find other ways to fight it, said a panel of experts *Network World.* recently convened.

Panelists indicated that the legislation is nothing more than an initial swipe at a problem that is much bigger than the attempted solution (go to www.nwfusion.com, DocFinder: 9143 to hear the Webcast). The panel, dubbed "Spam Forum: The Future of E-mail," was moderated by *Network World* Editorial Director John Gallant.

One issue is that the Federal Trade Commission, which has been charged with enforcing the law, has too much on its plate to effectively build many criminal cases against spammers, said Eileen Harrington, associate director for marketing practices at the FTC's Bureau of Consumer Protection.

"It really is a stretch for us," she said. "Spam investigations are very resource-intensive." The law gives the FTC new responsibility without new funding, and the organization has other high priorities, such as tracking identity theft and enforcing the new National Do-Not-Call Registry.

As for state anti-spam efforts, the states are in worse shape because of extremely tight budgets, Harrington said.

Another issue is that the definition of spam is still quite fuzzy. The new law limits the definition to unsolicited commercial bulk e-mail, leaving out political bulk e-mail, for instance.

But to some, spam is any e-mail they don't want.

"It doesn't matter how government defines [spam]," because in the end, what customers want to receive is what counts, said Mary Youngblood, manager of ISP EarthLink's Abuse Team. EarthLink gives its customers several options for spam filtering, so they can set their preferences.

Another issue is the law allows opt-out marketing — meaning a company can send e-mail users unsolicited advertising until the users tell the company to stop.

"Everybody gets a bite at the apple," said Ted Gavin, founding trustee and CFO of the SpamCon Foundation, a nonprofit group organized to preserve e-mail as a viable communications medium. "The problem is it's an expensive apple, and the person paying for it isn't the one biting the apple; it's the one holding the apple."

On the plus side, the experts agreed that the law raises awareness of the spam scourge among law enforcement agencies and starts to spell out how e-mail advertising might be done legally and ethically.

"It provides a framework for the good guys," said David Silver, vice president of business development and strategy at Responsys, an e-mail marketing firm. "For legitimate marketers, [the federal law] is less confusing than the [state] laws that were evolving and changing."

"Definition of the crime had to start someplace," said Wilson D'Souza, vice president of the global collaboration and directory services team for Merrill Lynch.

The panelists agreed that specifying directory-harvest attacks as a crime was impressive. Directory-harvest attacks are a spammers' technique for gathering valid e-mail addresses. They bombard e-mail servers with large numbers of messages aimed at fabricated addresses. When a message gets through, the spammer notes that the address is active.

"That practice is now a violation of federal law," the FTC's Harrington said. "Hopefully [spammers who conduct the attacks] will be criminally prosecuted. But if not, certainly the FTC will go after them in a civil suit."

Another provision in the law states that companies can be liable for spam crimes even if they hired another firm to do their e-mail marketing, SpamCon's Gavin said. That should help authorities prosecute companies that use spamming firms outside the U.S.

Only part of the solution

However, the panel clearly recognized that there is only so much the U.S. government can do. "Spam is really a global problem," Harrington said. "The U.S. has put its marker down." The FTC is working with other governments to track down spammers, "but it's very slow going," she said.

Technical tools and education for marketing companies and e-mail users also are needed, the panel agreed.

Postini CEO and President Shinya Akamine promoted his company's anti-spam services, saying that Postini uses its technology to find the attributes of good e-mail and let that through to its customers.

He also said anti-spam companies are now "bigger than the spammers" and can react quicker to spammers' techniques for getting through filters.

The panel discussed techniques for making spam a financially less-attractive option for marketing. Currently, marketing through e-mail costs very little to the marketer.

Gavin said that a "micro-postage" option — where senders pay a little for each message sent — has been around for a while with no success.

EarthLink's Youngblood said the ISP can use technology to identify spam-like behavior and have the ISP's switches deny traffic from a spammer once a threshold has been reached.

Certainly, waiting for a do-not-spam list isn't really an option. The panelists roundly criticized the idea of keeping a central database of e-mail addresses of people who don't want to receive e-mail, a concept similar to the current federal anti-telemarketing do-not-call registry.

Responsys' Silver said the database would have to be very specific about what e-mail is acceptable to a user and what isn't.

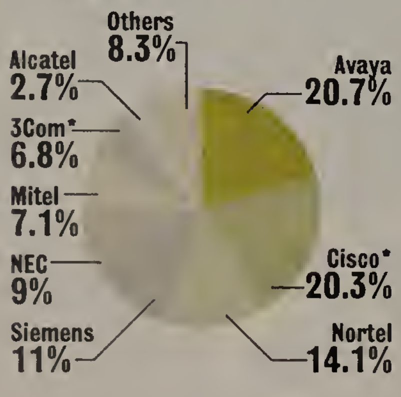
Akamine said the database "would be the biggest target in the world for hackers."

D'Souza said the database would be "pushing the problem offshore again," as spammers move operations to areas where do-not-spam lists don't apply. ■

Correction

The story "IP PBX push signals Avaya's evolution" (Dec. 8, page 1), included a pie chart with inaccurate VoIP market share figures. The chart should have appeared as follows:

U.S. line shipments for IP-only and IP/TDM-mixed PBXs, Q1 thru Q3 2003:



Total shipments: 2.7 million

*Vendors offer IP-only PBXs; all others offer TDM, IP and mixed PBXs.

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Lucent VPN Firewall Brick®
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NETWORK WORLD TECHNOLOGY TOUR

BACKSTAGE

WITH JOHNA TILL JOHNSON

Network World *embarks on its first Technology Tour of the year later this month, "Voice over IP: IP Telephony from Dollar One to Dollars Won." Keynoting the seminars will be* Network World *columnist Johna Till Johnson, head of consulting firm Nemertes Research.* Network World *Events Editor Sandra Gittlen recently spoke with Johnson to get her take on where IP telephony stands.*

What sort of momentum have you seen for IP telephony rollouts?

Five years ago, only about 25% of companies I spoke with were even considering IP telephony. In recent Nemertes research of midsize to large firms, more than 60% of companies I spoke with had already rolled out IP telephony — and the majority were planning to do so within one to two years.

Which industries do you see taking advantage of IP telephony the most?

Healthcare, retail, hospitality and manufacturing industries are leading. A big reason for this is that the biggest benefits come from increased productivity and mobility — something that resonates in customer- and process-centric industries. These companies measure productivity by how many patients they can care for, how many shirts or meals or hotel rooms they can sell, or how many widgets they can produce — and by customer satisfaction. IP telephony helps boost all of the above.

What's making IP telephony easier to roll out?

There's more competition now, so the quality of the products and the sound [quality] has improved immensely. Additionally, the vendors offer hybrid solutions, so IT managers don't have to win budgets for forklift upgrades. Instead, they gradually can migrate to IP telephony as PBXs need to be replaced. IT managers also are more comfortable with the technology. There are enough [IP telephony] success stories — illustrating cost savings, technical achievements and new applications that leverage personnel in more productive ways — to convince more companies it's real and here to stay.

What is the biggest misconception about IP telephony?

Many IT managers forge ahead with pilots, or in some cases, full-fledged rollouts, without performing a baseline [quality-of-service] analysis. They go into the project thinking they have an abundance of bandwidth already on their data network, so adding voice will be no problem. But in fact, they might need to add bandwidth, re-engineer portions of their networks, assess and buy new management/monitoring tools, and reconfigure routers.

What is the coolest or most offbeat use of IP telephony you've seen?

A health insurance company was having difficulty finding nurses to staff its call center. Rather than build a new center in a different city, the company began hiring nurses regardless of their geographic location. The nurses work from home. The IP-telephony-enabled call center routes calls and corresponding data to the remote agents via DSL lines and IP softphones. It was a low-cost way to resolve what could have been a costly problem.

Some IT managers say they want to wait until the industry settles out a bit before rolling out converged networks. Is this a sound strategy?

I wouldn't recommend sitting on the sidelines entirely. The industry is beyond early-adopter stage, and many products and services are enterprise-grade already. Companies should assess vendors and test products now. They need to conduct a baseline QoS study. ■

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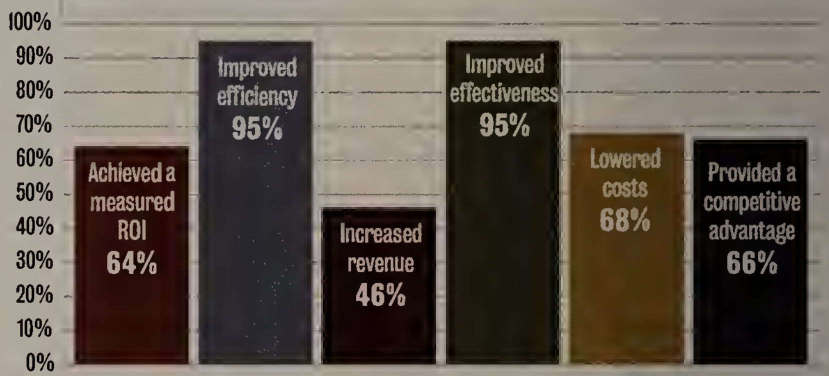
Vendors wrangle to control midsize business market

■ **BY ANN BEDNARZ**

Weighing CRM benefits

CRM software improves efficiency, users say, but its ability to increase revenue is less universal, according to a Gartner survey of 130 small and midsize businesses.

Percentage of respondents who say their CRM initiatives helped realize certain benefits:



Software vendors continue to jockey for the business of small and midsize companies, which make up the majority of the corporate population and account for a healthy percentage of IT spending.

Most recently, small and midsize business (SMB) specialist Best Software announced that its parent company in the U.K., the Sage Group, was acquiring Pleasanton, Calif., software maker ACCPAC International for $110 million. Meanwhile, infrastructure software maker BEA Systems is making waves with a series of planned software packages based on its WebLogic products and aimed at organizations with annual revenue of $100 million to $500 million.

The Best-ACCPAC combination will create a powerhouse among SMB specialists in the business applications arena. Best Software has nearly 1.8 million small and midsize business customers in the U.S. — the result of 15 acquisitions the company has made since 1998. Best's software brands include ACT, Peachtree, Timberline and SalesLogix.

ACCPAC, a subsidiary of Computer Associates (CA), brings to the deal 540,000 business customers and a software suite that includes accounting, CRM, human resources, warehouse management and point-of-sale products.

The deal is good for both sides, says Kelly Spang Ferguson, principal analyst at research firm Current Analysis. It lets ACCPAC break away from CA — a split that was being mulled through a planned IPO of the CA subsidiary. The Sage Group and Best Software also gain access to key ACCPAC technologies. Specifically, ACCPAC's hosted offerings provide an alternative to Sage's desktop products, Ferguson says.

ACCPAC has a more modern CRM platform architecture, which Best Software needs, Ferguson says. ACCPAC CRM was developed completely to support Web and wireless access, while Best Software's SalesLogix CRM line is based on older architecture.

Integrating ACCPAC's customers and technologies might help Best Software differentiate itself in the crowded SMB market. Its competition in the CRM market includes vendors with a pure SMB focus, such as FrontRange, Microsoft and NetLedger, as well as vendors such as Siebel Systems and SAP, which traditionally target large corporations but have come out with wares for midsize buyers.

For its part, BEA is working to forge partnerships with resellers and independent software vendors (ISV) to offer server software bundles based on components from its WebLogic Platform 8.1, which includes an application server, portal server and integration server. These components will be combined with applications and services from its partners, says Charles Ill, BEA executive vice president of worldwide sales.

BEA sells the bulk of its software to large corporations and counts some of the world's biggest businesses among its customers. By expanding its partnerships with resellers and ISVs, BEA says it hopes to find new business among smaller companies that traditionally have viewed its software as too expensive or complex to use. Simplified versions of BEA's WebLogic server products will include fewer features and be priced lower than BEA's enterprise offerings, Ill says.

Meanwhile, BEA rival IBM has worked over the past year to fill out its Express family of products, which have fewer features and cost less than IBM's enterprise offerings. So far, IBM has launched 13 Express offerings for SMBs, including versions of its DB2, Lotus, Tivoli and WebSphere products.

The sheer numbers of SMB buyers is fueling vendors' attention. There are 7.9 million small businesses with fewer than 100 employees, and 93,500 midsize firms with between 100 and 999 employees, according to IDC. This compares with just 9,000 large companies with 1,000 or more employees, IDC says.

Companies with fewer than 1,000 employees account for about half of North American companies' spending on hardware, software and services, analysts say.

James Niccolai, who is a correspondent with the IDG News Service's San Francisco bureau, contributed to this story.

Be a Net Know-It-All

■ **THIS WEEK'S QUESTION:**

Brent Townshend recently settled a patent infringement suit against Analog Devices and has similiar suits outstanding that involve Cisco and several other companies. What technology is at issue?

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Q&A

Capellas

continued from page 1

MCI is a relevant company with good people that serves a relevant and important role. It is.

If an enterprise organization has quotes from AT&T, MCI and Sprint for an IP VPN, why should it choose MCI over companies that haven't had similar problems?

First, people look to the relationship they've had with their account team. We've had very low attrition in our field salesforce. Second, our service quality has been outstanding. When I first came here we had this theme of customers, customers, customers. We made sure we put quality of service up top. Third, people remember the MCI that offered decades of innovation. These two to three years have been very difficult, but a lot of customers view that as an aberration of the long history of the company.

Has MCI lost any significant customers over the past couple of years?

We have seen great customer loyalty. If you look at our top 100 customers, we haven't lost a logo. There is another reason for this too: the cost of switching is quite high. There is, however, some technology displacement whether it's voice going wireless or frame relay users moving to IP, which inherently has some price reduction. We've picked up some and we've lost some.

How's MCI doing at acquiring new business?

We saw steady progress [starting last summer]. The period between July and December of 2002 was really tough. It's not really a question of acquisitions vs. disconnects. It's whether the industry is running hard enough to offset rate reduction. Rate reduction has three big factors, including lower prices, displacement by IP and a significant amount of network grooming.

Will rate reduction have a more serious impact at MCI than at competitors with higher profit margins?

No, it's the opposite. We traditionally have operated at a lower price point in the market; some say 10% to 15% lower. But whenever you have absolute dollars of revenue leaving an industry it ain't good for anybody.

What's MCI doing to boost its margins?

There are three or four things in the works, such as debt reduction, restructuring and pushing very, very hard to move more of our traffic to IP.

What are you doing to integrate the 40-plus acquisitions that MCI made during its WorldCom days?

We are being pretty aggressive. Because of the nature of continued consolidation of the industry, integrating multiple networks is inherent whether its Verizon, BellSouth or MCI. The question is, how you deal with it. We're putting our frame relay networks together and our ATM networks together. Everyone is moving to more consolidated billing and common portals. [This all] makes us more efficient, reduces costs and it's great for customers. It has my attention.

Are there technologies or services that fall by the wayside during this process?

The effect of voice over IP is gaining momentum at an incredible pace. I have a different opinion now on VoIP than I did 120 days ago. On the other hand, customers integrate at their pace. People are not going back and ripping out their PBX infrastructure, tearing their networks apart and completely displacing frame relay. If you're looking for [me to say] in 12 months ATM will be history and in 18 months frame will be irrelevant, that is a very simplistic view. There is an orderly transition going on and it will take time.

What's your outlook for industry consolidation over the next year or two?

Everyone [in the industry] has been talking about [mergers and acquisitions] since I got here. It's true as the industry matures there are dollars leaving the industry. But just because you have to be more efficient doesn't mean you have consolidation. In our space there are really only two substantial enterprise players. That's not very many. I don't give it a lot of thought. We have a very clear internal plan that we are marching to, and that's what we're going to stay focused on. There is a great risk in allowing yourself to get distracted.

"These two to three years have been very difficult . . .

. . . but a lot of customers view that as an aberration of the long history of the company."

Michael Capellas
Chairman and CEO, MCI

DRAKE SOREY

What's your take on the latest RBOC efforts in the enterprise services market?

They are looking at leveraging their base to move into new markets. We are seeing some competitive IP VPN stuff by Verizon, SBC and BellSouth. They are trying to move into the mid-market to establish a baseline, then move to the enterprise.

What's your view of the FCC?

That's really a tough job. No one is going to tell them they're doing brilliantly no matter what they do. The tariff system does really need major modifications. They are trying to step forward to solve an unsolvable problem. They are trying to encourage the industry to have more collaboration.

Are they making your job easier or more difficult?

I take an opposite view of what some of my predecessors have. I'm trying to come in, not in a real in-your-face type of advocacy position, but talking about where the market is going from a technical and economic perspective. They have been very open to that.

When you took the job many people asked: What is he thinking? What were you thinking?

I have believed we would see the effect of the Internet as one of the most important technologies of our lifetime. Inherently the intelligence had to move to the network. I'm a technology guy through and through so the idea of working for an advanced network company — particularly one that was part of the foundation of the Internet — was attractive. There was a part of me that said, 'Gee, here's this great company that's been hijacked by a handful of bad people.' I was a little naive in the belief that all of the problems had been identified. We've had a few additional wrinkles I hadn't anticipated.

One of those "wrinkles," which gained public attention last summer, was MCI's call routing through Canada to avoid certain connection fees. How has that issue been addressed?

We have done a lot of internal analysis. We immediately went in and said least-cost routing is not particularly meaningful for our economic model and completely shut it down.

Reports had surfaced that you actually threatened to resign when this problem came to light under your watch. Is that true?

No. What I said was, I want an independent review with internal and external people, and anything that needs to be done I want corrected immediately. There was no threat to resign.

Another issue that popped up was the General Services Administration's proposed disbarment of any new MCI contracts. Where does this situation stand?

They put two parameters in front of us. We had to put a world-class ethics program in place. And we had to get our internal control project done, which we needed to do anyway. We are very respectful of the process. I'm not going to comment on what [the GSA] may or may not do, because it would be inappropriate.

What has to happen for MCI to put these and other such issues behind it so that the company can focus on the future?

We just have to be unrelenting. We have to do the right thing because it's the right thing to do. We just have to do it every day. We have to hire the right people and reward the right behavior. Getting out of bankruptcy is also quite helpful. Will we still have to continue to operate at a standard higher than everyone else? Yes. Is that inappropriate? No. That's part of the punishment and we're fine with that. ■

More online!

Read more of Michael Capellas' views in an unabridged version of the interview.

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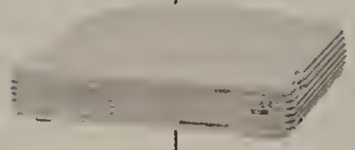

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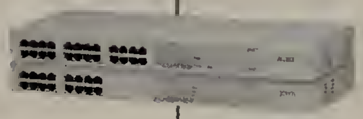

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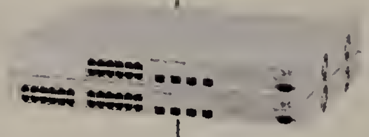

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Companies mull commercial vs. freeware SSH

■ BY ELLEN MESSMER

It's a battle going on across many large corporations: should they manage remote servers via Open Secure Shell freeware or commercial SSH products?

It's a truth-or-consequences situation that pits OpenSSH freeware proponents against those who argue freeware carries hidden costs, such as a higher administrative burden. SSH is a common tool typically used by network administrators to remotely communicate with hardware devices. Experts caution the answer depends on each corporation's situation, but what matters is carefully tabulating the pros and cons.

"You have to do this evaluation for every open source product you bring in," says Burton Group analyst Gary Hein. One risk of freeware is simply the possibility the freeware group might split in a major rift, he noted. Sometimes there's already a corporate policy against open source freeware tools — the federal government is debating having one — because of deep suspicions freeware might have Trojans or simply lack a clear process of open source accountability when problems are discovered.

In a recent Burton Group report, "Open Source Software: Risks and Rewards," the consultancy outlines basic legal and technology questions that users should ask, plus some vendor strategies for open source. The report points to the Free Software Foundation and Open Source Initiative as two organizations defending open-source principles.

Open source freeware is clearly alive and kicking in corporations, with Linux leading the way. The Burton report notes there's a Web site that tracks open source code, SourceForge at www.sourceforge.net, which lists 66,650 projects with more than 675,000 registered users. In addition to Linux and Apache, the MySQL database is available for free use, as is Jboss, a Java 2 Platform Enterprise Edition-like Java Application Server.

> **"With OpenSSH there's no such thing as a free lunch. You're going to pay for an employee to do the work of service and support."**
>
> **Gary Hein**
> Analyst, Burton Group

But for most organizations, the time may arrive when the IT department asks: Can we get by on freeware?

That debate is roiling the IT department at Comcast Cable Communications in Denver, says Chad Monteith, a senior systems administrator. The IT department has been in charge of about 50 Unix servers, primarily Sun and HP, that came with one version or another of SSH freeware built directly into the servers.

Comcast also has added commercial SSH code from VanDyke Software and SSH Communications Security to some of the servers over the years. These servers have ended up being managed using either SSH open source freeware or commercial client software by designated systems administrators.

The problem is, Comcast's IT department is reorganizing so that fewer systems administrators will manage more servers. And in assessing what type of client/server SSH software is being used on the 50 servers, the IT department is discovering there are incompatibilities between vendors' SSH implementations and the freeware.

"We do use a lot of open source in our development and operations," notes Monteith, emphasizing he isn't against using open source freeware per se. "But the breaking point here is we have five different SSH 'builds,' and all these weird issues, such as this client can't communicate with this freeware."

He says he's in favor of having the IT department select one version of SSH — and he is leaning toward selecting one common commer-

See SSH, page 49

Firm looks to plug in power-line networks

■ BY PHIL HOCHMUTH

Start-up Asoka is looking to help companies quickly set up remote or small-office LANs without stringing Category 5 cabling everywhere or configuring a Wi-Fi network and security settings.

The company this week is launching its PlugLAN network outlet, based on technology called power-line communications (PLC) that uses standard home or office power cabling as a LAN infrastructure.

PLC plugs a PC with a standard Ethernet network interface card into a PLC device, which transforms Ethernet packets into HomePlug 1.0 standard signaling. These signals are sent over the power-line infrastructure in a home or office and are picked up by other PLC-based devices attached to AC outlets. The result is a 14M bit/sec shared LAN environment, similar to a 10Base-T hub, with a range of up to 1,500 feet between nodes.

Unlike previous PLC equipment, which was plugged into a wall outlet, Asoka's PlugLAN integrates a PLC adapter into a standard AC wall jack. It includes an AC plug and an RJ-45-based plug for connecting networked devices. In addition to sending data at 14M bit/sec speeds, the device secures LAN traffic with 54-bit DES transmissions.

Power-line networking is not new, as X-10, CEBus and LonWorks date back to the 1970s and 1980s. These technologies were used mostly in home or industrial automation networks, and had very low bandwidth — less than 500K bit/sec.

Asoka also released an IP camera based on PLC technology. The PlugLink IP Camera can be plugged into any AC outlet and communicate with other PLC-attached PCs. The camera can be managed via a Web interface, which makes the device accessible over the Internet, according to the company.

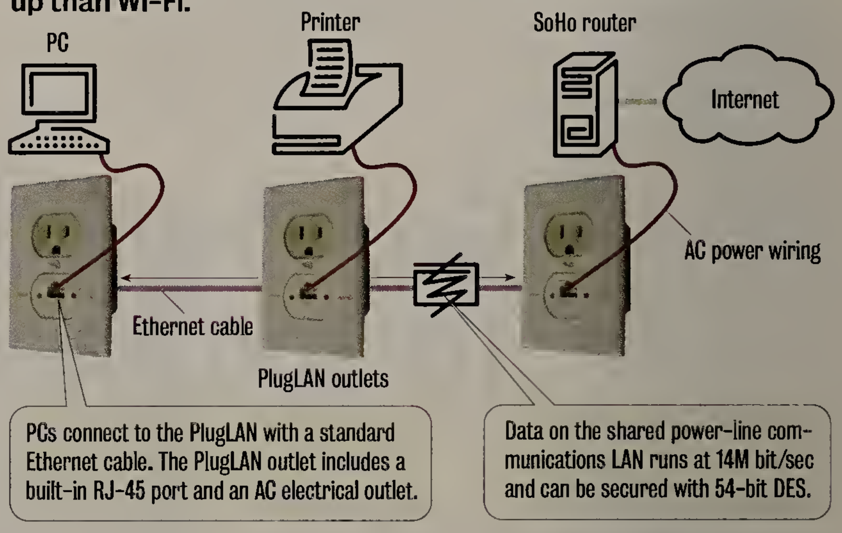
While possibly a good LAN offering for remote offices, small businesses or non-tech-savvy organizations, observers say the enterprise PLC gear won't appeal to most business IT shops, where Cat 5/6 cable plants already exist, and where Wi-Fi networks are becoming more abundant and easy to set up.

Asoka competes with Belkin, Linksys, NetGear and Siemens, among others, in the PLC HomePlug market.

Asoka's PlugLAN costs $99, and the PlugLink IP Camera starts at $400. ■

Ethernet over power

While its PlugLAN PLC gear is slower than standard Ethernet, Asoka says its offering is faster, more secure and easier to set up than Wi-Fi.



PCs connect to the PlugLAN with a standard Ethernet cable. The PlugLAN outlet includes a built-in RJ-45 port and an AC electrical outlet.

Data on the shared power-line communications LAN runs at 14M bit/sec and can be secured with 54-bit DES.

Sun shelves Cobalt, focuses on x86

■ BY JENNIFER MEARS

Sun is mothballing its Cobalt server appliance line, and the news might not be good for businesses running the specialty boxes. But analysts say it's not surprising as the company focuses on building up its low-end server business.

Sun has quietly been discontinuing its line of integrated software and hardware packages since the beginning of last year when it announced it would no longer support the Cobalt Networks server appliances. Server appliances are servers designed for specific tasks such as e-mail, Web serving and file serving.

The idea is to provide customers with an easy-to-use — and quick-to-deploy — box to support online business.

Sun announced last February end of life for its Cobalt RaQ 4 server appliance, as well as the CacheRaQ 4. The Cobalt RaQ XTR server appliance was discontinued in July, and the Qube 3 in October. Sun announced end of life for its Cobalt Control Station server appliance in November.

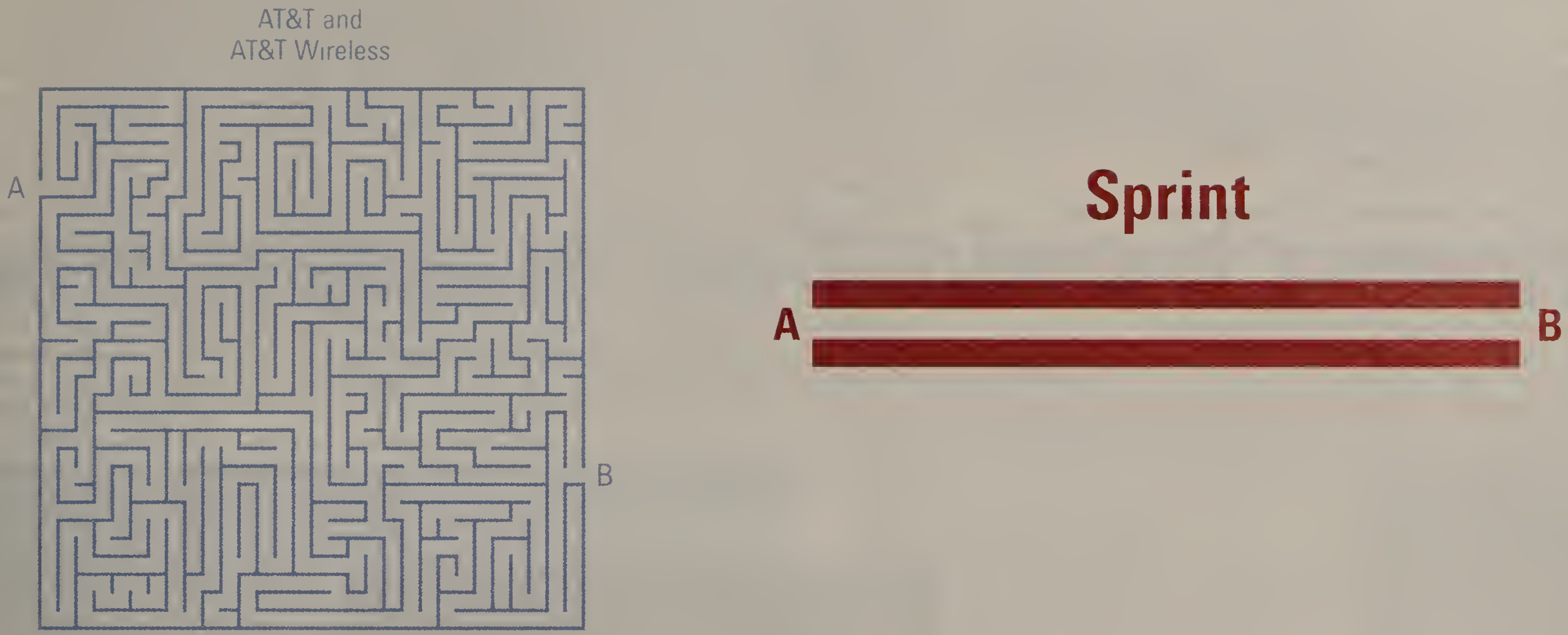
The last remaining Cobalt box, the RaQ 550, will reach end of life Feb. 19, Sun says, and the company stopped taking orders for the server as of Nov. 20.

Sun says it will continue supporting all its Cobalt products for three years from the end-of-life date.

See Sun, page 16

Special of the day

According to Netcraft, Sun's Cobalt appliance servers reached their peak in August 2002, serving up 3.1 million Internet hostnames and 942,000 active Web sites. Netcraft's November 2003 hosting survey found the specialty Web servers were serving just 871,000 hostnames and 527,000 active sites.



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Sun

continued from page 14

Analysts say the news marks an important step in Sun's efforts to improve its low-end server business. Better known for its expensive, high-end boxes, Sun bought Cobalt for $2 billion in 2000 in an effort to provide customers with a low-cost offering.

At that time, analysts predicted the market for server appliances would explode. IDC pegged the market for the specialty servers at $740 million in 1999, estimating that it would skyrocket to $15 billion by 2004.

When the Internet bubble burst, the demand for the servers dwindled. In addition, general-purpose servers began to offer features that made the specialty servers seem almost obsolete.

“There will always be a niche market for an appliance server,” says Vernon Turner, group vice president of Global Enterprise Server Solutions at IDC.

“But given the advances that systems management [partitioning, provisioning] provide to create an appliance-like device, the overall value proposition for appliances is much harder these days,” he adds.

Analysts note that segments of the server appliance market, such as security appliances and network-attached storage devices, have taken off. Sun still offers a VPN/firewall appliance, but it is Intel-based.

“As Sun has evolved their strategy for x86, it became clear that they really had to consolidate their product line,” says Jamie Gruener, a senior analyst with The Yankee Group. “So they're streamlining the products they offer.”

Analysts note that the recently announced partnership with Advanced Micro Devices (AMD) and the plan to introduce two- and four-way Opteron-based servers this year illustrate Sun's commitment to it low-end business.

Sun might not have been “culturally and operationally” ready to enter the high-volume server market when it acquired Cobalt, Turner says. “Perhaps they are now better prepared to work with AMD.” ■

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NLR

continued from page 1

Europe in terms of high-end network deployments and high-end applications. That's not good for our research community, and it's not good for the U.S. economy.”

Taking back the lead

The NLR is an attempt by the U.S. research community to seize back the lead on Internet development.

More than a decade has passed since U.S. academic, corporate and government researchers had access to a truly experimental, nationwide high-speed network.

In the late 1980s and early 1990s, the U.S. research community had access to the National Science Foundation's NSFnet, which linked five supercomputer centers at 45M bit/sec. However, NSFnet was used primarily for high-end scientific applications such as weather modeling and aerospace simulations rather than network traffic analysis and protocol testing.

The NLR, on the other hand, will reserve half its bandwidth for network-oriented research, while the other half will be available for scientific applications. That's why proponents compare it to the Arpanet, which was a military-funded network research project. The NLR can support experimentation at the optical, switching, routing, middleware and application layers of the network.

Disruptive, next-generation Internet technologies are “not going to be discovered in some little lab but in connecting to a real-world network and seeing what happens,” Johnson says. “That's where the innovation came from with Arpanet and NSFnet. NLR gives us a tool to work on those sorts of applications.”

The NLR demonstrates “a level of collaboration that hasn't existed on a national scale aimed at new technologies and network research since the early days of the Arpanet,” agrees Tracy Futhey, vice president for IT and CIO at Duke University and chair of the NLR board. “It's a really exciting project.”

The network project is an outgrowth of several years of talk within U.S. academic circles about the need for a new infrastructure for network experimentation and development. That's because network researchers can't run many experiments on the Internet2, a production network that links 200-plus U.S. universities with one 10G bit/sec link. College students swapping music and video files consume much of Internet2 bandwidth.

“With Internet2, we have a very big highway — 10G bit/sec — but it's one lane,” explains NLR CEO Tom West. “The problem for network researchers is the freshman downloading Napster or the astronomer who is eating up the bandwidth . . . NLR is 40 lanes vs. one lane.”

The NLR is a five-year project, and half the funds for the project have been committed. Universities are financing the NLR, which has received no federal funding. In contrast, Arpanet and NSFnet were U.S. government projects.

“Duke is making a multimillion dollar commitment that optical networking and high speeds are something that we have to have from the desktop on out.”

Tracy Futhey, CIO and vice president for IT, Duke University

Duke University is spending $1 million this year to participate in the NLR and to upgrade its regional and campus networks to support 10G bit/sec. Duke has committed to participate in the NLR for the next five years.

“Duke is making a multimillion dollar commitment that optical networking and high speeds are something that we have to have from the desktop on out,” Futhey says. “This gives us the opportunity to have our faculty access supercomputing centers and other academic institutions across the nation.”

The NLR is being built using optical dense wavelength division multiplexing (DWDM) technology. It can support 40 simultaneous light wavelengths, but only four wavelengths are being lit during the initial network rollout. The other wavelengths will be added as additional funds are committed to the project.

On top of the optical DWDM network, the NLR is deploying a switched Ethernet network and a routed IP network. Proponents say the NLR is the first wide-area use of 10G Ethernet, which is common in corporate LANs.

Thanks to the plunge in dark fiber prices over the last three years, the NLR is buying its own network footprint and will provision the network itself. This will be the first time the university community has owned a network test bed.

“When I talk to service providers they ask why we aren't buying managed services,” West says. “It's a control issue. It's recognizing that we have multiple [network] layer needs. We do believe [ownership] has cost benefits.”

Putting it to use

The NLR will be used for a wide range of network research from optics to traffic measurement and application development.

“Researchers developing new optic technology need breakable waves that they can [run experiments] on. They need dark fiber,” West explains. “Another camp of researchers . . . wants to be able to go into the network operations center and gather data and measure the data. New techniques will come out of that research to improve the flow of information and security.”

Research on the NLR is scheduled to begin next summer. Although the initial experiments haven't been chosen yet, NLR members anticipate running scientific applications that require processing and storing massive amounts of data in a distributed fashion over high-speed network connections.

“A lot of research in the science space is very similar to the modeling and simulation done by the oil industry or banks,” says Dave Richardson, manager of network engineering and special projects for the University of Washington's Computing and Communications Division.

“There will be some pretty clear wins for enterprises that will come out of that type of work,” he adds.

Corporate network managers likely will benefit from lessons learned from the NLR about operating 10G Ethernet on a WAN. That service is not yet commercially available, and Cisco is tweaking its products to support this aspect of the NLR.

“We're looking at the ability to create point-to-point or point-to-multipoint switched Ethernet virtual private networks between different parts of the network depending on what the researchers need,” Richardson says. “I could see that fitting very well into a corporate network that has large campuses in multiple locations.”

The two network companies participating in the NLR so far — Cisco and Level 3 — predict that the experimental test bed will spawn new offerings for corporate network managers during the next two to eight years.

Cisco officials won't quantify the company's investment in the NLR, but says it is “substantial.”

The company plans to use the test bed for its own research as well as giving grants to university researchers that take advantage of the backbone.

The NLR uses shipping Cisco products, but Cisco plans to test early beta versions of new products on the backbone.

Level 3 bid on the project because it wanted a glimpse into the Internet's future.

No sideline sitters

“We didn't want to be sitting on the sidelines while advancements in network research were happening,” says Geoff Jordan, vice president of research and education for Level 3. “We didn't want to wait for the [research] to trickle through a standards body or six years later have a hardware vendor tell us what the latest and greatest is.”

Whether the NLR will be as influential as the Arpanet or NSFnet remains to be seen.

“For the last 10 years, most of the high-speed experimental networks have been developed in support of application use as opposed to network research,” says Paul Barford, assistant professor of computer science at the University of Wisconsin at Madison and an NLR board member. “NLR is timely and essential to have for the Internet to grow and scale as it has for the last 30 years.” ■

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The new face of fault-tolerant servers

■ **BY JENNIFER MEARS**

With the Internet extending business around the globe — and around the clock — there is a demand on server systems to be up and running all the time. For some companies that means clustering a bunch of boxes to achieve high availability, but analysts say in many cases IT managers should take a second look at fault-tolerant servers.

In the past, high-availability systems such as Stratus' Continuum line and HP's NonStop servers cost as much as millions of dollars and were aimed primarily at niche markets such as telecom and financial industries. But in the past year or so, systems vendors made servers more affordable for customers who might want to use the fault-tolerant servers for applications such as e-mail or Internet retail transactions that were not associated with high-availability systems.

Fault-tolerant servers include multiple system components that operate in lock-step so that if one component fails, the other picks up and the system keeps running. High-end systems such as NonStop servers from HP are massively parallel systems that run two copies of every job running on the server.

"NonStop fault tolerance really shines because it is an integrated stack of hardware and software," says Gordon Haff, an analyst at Illuminata.

Others such as NEC and Stratus, which sell fault-tolerant systems for Windows, provide hardware safety nets, but do little to protect against software failures, analysts say. However, they get around that limitation by focusing on vertical applications in which the software stack is more cohesive and rigorously tested, Haff says.

Meanwhile, clusters of servers ultimately might provide better protection against software faults, that do so with "considerable complexity and increased operational

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Widening options

Systems vendors such as HP and Stratus are making fault-tolerant servers more accessible by putting the high-availability boxes on standard platforms.

Stratus ftServer 6600 System

- Intel-based four-processor system.
- Good for server consolidation and database applications.
- Can be configured with dual or triple CPU redundancy.
- Starts at $60,000.

HP NonStop server

- Uses MIPS chips and can support up to 4,000 processors.
- Good for mission-critical applications that can't tolerate downtime.
- Once ported to Itanium can support triple redundancy.
- Starts at about $400,000.

Short Takes

■ **SMC Networks** has introduced a basic 10/100M bit/sec Layer 2 Ethernet switch, the **TigerSwitch SMC6724AL2b,** for $400. With 24 ports, the box costs about $17 per Ethernet port, and includes basic connectivity features such as port speed auto-detection and spanning tree support. SMC plans to release Layer 3 and Layer 4 versions later this year.

■ Engineers from **Fujitsu** and **Red Hat** have begun working together to strengthen the capabilities of **Linux** for large corporations as part of a global Linux partnership between the two companies, Fujitsu says. The Joint Development Organization will serve as a base for the two firms to share technology and develop enhancements to the Linux operating system that meet the needs of enterprise customers and strengthen customer support efforts. The newly formed organization extends a partnership set up in May between Red Hat and Fujitsu to collaborate on Linux development and marketing efforts.

Catalyst 6500 mgmt. tool on the way

Software lets users configure, control venerable switch.

■ **BY PHIL HOCHMUTH**

Cisco last month gave customers a sneak peek at a new network management tool for deploying multiple network functions on the Catalyst 6500 platform.

The Integrated Services Device Manager for the Catalyst 6500 will give users one interface for configuring intrusion detection, VPN, firewall and Layer 4 to Layer 7 switching capabilities on a Catalyst 6500 switch chassis. Even though the company has offered security and acceleration blades for its flagship switch for more than a year, management of these blades in a switch has been scattered.

The Catalyst 6500 is Cisco's top enterprise switch chassis, and supports Layer 2 to Layer 7 switching, 10/100/1000M bit/sec and 10G Ethernet, and a variety of security modules. The company has shipped more than 180,000 chassis, and has made $11.4 billion in revenue from the product since its introduction in 1999.

"This is something Cisco had to do," says Zeus Kerravala, an analyst with The Yankee Group. "Management tools embedded in [Cisco] switches have been poor to fair, at best, in terms of functionality." He says that different modules in the Catalyst 6500 in the past had to be managed "blade by blade," which could leave networks prone to configuration errors.

The software lets users graphically configure and view configuration settings for the various application blades available for the Catalyst 6500, which include firewall, intrusion-detection systems (IDS), Layer 4 to Layer 7 switching and VPN termination. In the past, these blades had to be managed as individual network appliances that happened to be running in the Catalyst chassis.

The software detects new modules that are inserted in the chassis. Users can view settings of all blades installed and set up network configurations between blades in the chassis and on individual modules.

This could involve assigning IP addresses for the modules, separating a firewall or VPN module in a separate virtual LAN subnet, or applying security rules to the modules.

The software also lets users check the IOS commands that will be sent to each module before they are sent. Before settings are pushed to the hardware, a pop-up screen shows the command-line instructions, which can be sent, revised or canceled through the interface.

Additionally, the software includes a wizard setup mode, which lets users to set up firewall, IDS, VPN, multilayer switching and other functions with pre-set templates. This involves going through a series of check-box screens that ask questions about the desired network setup and utilization characteristics of the network.

The Integrated Services Device Manager will be available for free with new Catalyst 6500 switches in the first half of this year, the company says. Cisco also says it will integrate management functions in the software with other device management platforms, such as Cisco's VPN/Security Management Solution software for managing networks of Cisco firewall, IDS and VPN equipment. ■

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TOLLY ON TECHNOLOGY

Kevin Tolly

Jumbo frames: More relevant than ever

In a recent Network World "High-speed LANs" newsletter, editor Jeff Caruso posed the question: "How relevant are jumbo frames today?" He noted that, although they were never officially sanctioned by the IEEE, a significant number of switch vendors support them. I'll answer his question by saying that they are more relevant than ever.

Foremost is that ever-faster LAN versions of Ethernet exacerbate the problem caused by Ethernet's "official" maximum frame size being pinned at a tad more than 1,500 bytes — as it was when Ethernet's top speed was 10M bit/sec.

The argument is all about efficiency — specifically, when transporting large files, as would be likely with applications such as desktop backup and storage-over-IP. The shorter the maximum frame size (frames and packets being used synonymously by the industry), the more frames-per-second have to be handled to fill the pipe — that is, to utilize the Ethernet transport at or near wire-speed.

Imagine getting a letter in the mail that is delivered as a stack of envelopes with each envelope containing a single word and you start to get the idea.

At 10M bit/sec it takes only about 800 frame/sec to fill the pipe. Every time we ratchet up Ethernet's speed this number goes up accordingly. With Gigabit Ethernet it is in excess of 80,000 frame/sec — and, remember, that is using the largest frames possible. While vendors have developed ways to "mitigate" this load (using offload schemes and approaches such as interrupt coalescence) it remains a problematic workload. With jumbo frames, it takes less than 1,400 frame/sec to fill the pipe.

With 10G Ethernet, the problem gets 10 times worse.

So why aren't vendors embracing jumbo frames? Well, they are — they are just doing it very quietly.

The newsletter cites The Tolly Group's 2002 Switch Interoperability study as evidence of the support. In our recently completed 2003 study, interest in jumbo frames continued to grow. And multiple vendors, Dell for example, have passed our standalone "Tolly Verified" certification for jumbo frames support.

Tests, formal and informal, run by The Tolly Group and others have shown repeatedly the benefits of jumbo frames: higher throughput and lower CPU utilization.

While those benefits have always been desirable, it seems as though it is the storage-over-IP trend that has given religion to a lot of vendors. For the past two years on our Network World "State of the LAN" tour, switching vendors have been unanimous in their support for jumbos — some even go so far as calling it a sine qua non for running IP storage networks.

My view on why it is not standard is that it is political. Jumbos were introduced and promoted primarily by Alteon WebSystems (acquired by Nortel).

Because of that, Alteon had an early lead in implementing the feature and competitors fought back by denying it "standard" status.

Jumbo frames works, use it. Maybe now that the market has declared it viable, the IEEE will decide to do the right thing and make it a standard.

Tolly is president of The Tolly Group, a strategic consulting and independent testing company in Boca Raton, Fla. He can be reached at ktolly@tolly.com.

Fault

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costs," Haff adds.

As a result, IT executives might want to consider new fault-tolerant systems that meet stringent demands for uptime, but at a lower cost than traditional fault-tolerant boxes, analysts say. Fault-tolerant servers might save businesses money vs. clustering in the long run, says Jim Johnson, chairman of the Standish Group, a research firm that specializes in IT investment planning.

"People look at the sticker price and get sticker shock, but if they looked at what they pay for over three or five years they'd be surprised. For example, only 10% of the operating cost is the hardware," he says. "You have to look at the unit of work you get out of these things. If you just look at the purchase price of the hardware, you haven't done your homework."

He says his research has shown that single servers have better uptime than clusters, with clusters of servers averaging 99.535% uptime and individual servers averaging 99.613% uptime. NonStop servers average 99.979% uptime.

"I've seen cases where it's much cheaper to run a NonStop than it is to run a Unix cluster with Oracle because those fees get really expensive and the manpower to manage it gets expensive," he says. "One recent case we looked at, the cost was 30% less for the NonStop. While that is not always the case, you really have to look at your situation."

Ron Ham, IT manager of manufacturing IT systems for the Performance Fibers Group at Rayonier, says fault-tolerant systems can be easier to deal with than clusters of servers. Ham says he had looked at the fault-tolerant machines for years, but because of the size and cost of those boxes he was running clusters of Microsoft servers for high availability instead.

It wasn't until Stratus rolled out its lower-priced systems, which start at $30,000, last year that the fault-tolerant servers became an option for Rayonier's Jesup, Ga., data center.

"When you compare the hardware cost of a Microsoft cluster with the Stratus ftServer 3300 they were competitively priced. It's what we refer to as hardware redundancy vs. software redundancy so you've got two of everything and it's hot swappable," he says. "The other issue is that not every application works well in a clustered environment. We use a particular set of products that are made by Aspen Technologies and they are not cluster worthy so for that reason we had to find a cost-effective redundant hardware solution."

Ham has five Microsoft clusters running and says he is considering bringing in more ftServer boxes to replace the existing Microsoft clusters. Clusters demand more-complex software to run and manage, he adds.

"With hardware fault tolerance it's more at a circuit board, hardware level so the overhead is less on the equipment itself. The ability to repair is easier; it's all plug and play," he says.

Meanwhile, HP, which is in the process of migrating its legacy Compaq Tandem systems — now called NonStop — to Itanium, says it might ultimately roll out lower-priced systems, as well. HP declined to talk about exact pricing.

In November, HP announced that the foundation of the NonStop operating environment had been successfully ported to the Itanium architecture. Pauline Nist, vice president and general manager, NonStop Enterprise Division at HP, says the company plans to roll out the Itanium-based systems by year-end or early next year.

"But if you look at where the chip technology is going long term, with lots of cycles and the kind of support for multiple CPUs and things like that, you will be able to see some very clever lower-end systems in the next two to four years," she says. ■

Nokia upgrades its SSL remote-access software

■ **BY TIM GREENE**

Nokia has upgraded its Secure Sockets Layer remote-access gear to better handle key popular applications such as Microsoft Exchange and Lotus Notes.

In addition, Nokia Secure Access System Version 1.1 clears up some problems users might have had accessing Citrix Nfuse Classic, and some Web-based applications perform better, Nokia says.

Nokia Secure Access has handled these applications before, but for differing reasons, the upgrade handles them better. For instance, with some Web-based applications, the Nokia software had trouble getting Java scripts to display properly. With Exchange and Citrix, some of the ways individuals deployed the applications created problems for the Nokia software. IBM upgraded Notes so the upgrades required corresponding alterations to Secure Access, Nokia says.

Making SSL remote-access gear work with all types of applications, not just Web-based, is the main goal of most SSL vendors such as Aventail and NetScreen (Neoteris). These vendors use the SSL capabilities of Web browsers, so they handle Web-enabled applications well. To access other types of applications requires either pre-installed client software or Java or XML downloads at the time of a session.

SSL remote-access vendors have been in a rush to add features to their products to keep up with each other, and some of these are added before they are optimal, says Michael Suby, an analyst with Stratecast Partners. "The idea was to get a feature out there quickly, then add to it as they go along. Just because they had the feature doesn't mean it was a great feature yet."

Secure Access System software also adds features to its client-scanner capabilities that check whether remote machines are configured appropriately to warrant access through the Secure Access gateway. Client scanning audits remote machines to check on things such as firewalls and virus scanning, and if they are found lacking, denies access or cuts back on what resources the machine can reach.

The upgrade provides notification for users about why access was curtailed. The software still lacks the ability to redirect the remote machine to a site where lacking elements can be downloaded, but that is being planned, Nokia says.

Nokia also is adding support for multiple languages to its SSL remote-access portal page so international companies can present access options in users' native tongues. Languages include English and Japanese, but the company says it will add simplified and traditional Chinese, French, German, Korean, Brazilian Portuguese and Spanish over the next two months.

The new version of Secure Access is shipping now with new equipment, and is an upgrade for customers as a download from the company Web site. ■

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AV, IT system marriage proves powerful

■ **BY CAROLYN DUFFY MARSAN**

In December, Dow Chemical wrapped up a three-year, multimillion dollar project that involved upgrading all of its videoconferencing systems worldwide and migrating the traffic from dedicated ISDN lines to a private IP network.

Led by a team of audio/visual and IT specialists, the project required installing new hardware and software in 560 conference rooms located in 43 countries. Dubbed iRoom, the effort involved standardizing conferencing room equipment and migrating audio and video traffic to the company's converged backbone network.

The iRoom project's goal is to improve information sharing across all levels of the company while reducing audio/video support costs and network infrastructure bills.

"If you look at the networking alone, we're going to save money with iRoom," says Chris Duncan, global leader for eCommunication Technology at Dow. "But the biggest value that's much harder to quantify is the speed of decision making and the increase in information sharing."

By going away from the ISDN-based videoconferencing system, Dow also hopes to cut back on business travel and conduct more meetings over its IP network. "We can improve work/life balance," Duncan says. "If you use iRoom today, you can have dinner with your family tonight."

Dow is not alone. More companies are merging their audio/video and IT systems over converged IP networks. This trend is evidenced in corporate boardrooms, conference rooms and classrooms in a range of industries.

Cosmetics giant Estee Lauder is installing leading-edge audio/video/IT systems in five classrooms in New York City, from which it will broadcast training programs about various products to 1,500 salons across the country via the Internet.

> **"In the past, no two conference rooms worked the same. Now you can go to Hong Kong or the Netherlands and use the same equipment."**
>
> **Chris Duncan**
> Global leader for eCommunication Technology, Dow Chemical

The District of Columbia government recently installed command centers for monitoring whether traffic lights are down and the pace of snow removal on city streets. The audio/video displays at both centers are fed information via an IP network.

Museums such as the Smithsonian are deploying converged audio/video/IT systems. Even the projectors in movie theaters and stadiums increasingly have content served up over an IP network.

"Virtually everything we do is involved with interconnecting with the Internet," says Tom Peters, vice president of AV-Washington, an integrator of audio/video/IT systems whose clients include the U.S. House of Representatives and AOL. "IP is rapidly becoming the method of choice instead of ISDN or [proprietary network technology]."

Nearly one-third of corporate audio/video systems are networked, according to a September 2003 survey of corporate audio/video managers in large companies that was conducted by the International Communications Industries Association (ICIA), a trade group for AV manufacturers, dealers and systems integrators.

Network ratings

According to the survey, 60% of the respondents deemed network connectivity important or the most important feature. Network connections were most commonly used for audio/video conferencing, remote monitoring and remote troubleshooting, the survey said.

For example, AOL has hooked up audio/video equipment at its Dulles, Va., campus to its IP infrastructure. Now the head of AOL's audio/video department can monitor the status of projector lamplights from his office and change them before they fail.

Another common application is videoconferencing, which is increasingly running over Ethernet/IP networks rather than older ISDN lines. Often, companies need to expand the bandwidth of their backbone networks to support videoconferencing sessions and other video content, including CEO speeches and training courses.

"When you're moving live [videoconferencing] traffic over the network, it does require more bandwidth than simple control systems or store-and-forward content transfer," says Sidney Lissner, founder and CEO of AVWashington. "[Videoconferencing] over IP is definitely an issue where the IT department needs to be a party to the conversation."

The audio/video and IT teams at Dow worked together on the iRoom architecture. Dow decided in 2000 to build a converged IP network for its voice, video and data. As part of the effort, Dow would eliminate a separate ISDN network that was used for videoconferencing and operated by its audio/video department, not its IT department. All Dow's videoconferencing centers worldwide would be upgraded.

Dow assembled a team of audio/video and IT specialists to create the iRoom integrated videoconferencing room architecture. IRoom provides all the tools that Dow employees need to have in their meeting rooms, including audio conferencing, videoconferencing and whiteboarding. All of the new iRoom systems are connected via Ethernet to the company's private IP network.

Deploying a standard iRoom architecture in all its conference rooms worldwide is part of a broader effort at Dow to unify IT platforms. Dow gives the same computer, office suite and e-mail package to every employee around the world. Now all the company's conference rooms have the same equipment.

"In the past, no two conference rooms worked the same," Duncan says. "Now you can go to Hong Kong or the Netherlands

See Audio/video, page 22

Short Takes

■ **Microsoft** has released the second beta of **Host Integration Server,** countering earlier suggestions that the product would not be upgraded because its functionality would be rolled into other Microsoft E-Business Server products. Host Integration Server 2004 succeeds the 2000 version of the software, released in August 2000. The update promises to make it easier to link Windows systems with IBM mainframes and mid-range AS/400 servers, known as iSeries servers. It also is meant to make it easier for customers to migrate away from those IBM systems, and it steps up competition with IBM's WebSphere offerings. Microsoft says it has about 10,000 Host Integration Server customers, mostly large companies that use the product in branch offices for access to applications and data on IBM mainframes or AS/400 machines. Host Integration Server 2004 offers a new transaction integrator that has been extended to cover AS/400 systems. The transaction integrator lets users take mainframe and AS/400 applications and publish them as Web services using the Microsoft .Net Framework and Visual Studio .Net developer tools, Microsoft says. The final version of the product is due in mid-2004.

■ **WiredRed Software** recently released its software-based **e/pop Web Conferencing** service, which combines audio, video, presentation and application sharing accessible via an ActiveX control and hosted by the customer. Viewers access the server via a Windows 95 machine or greater and a standard Web browser. On their first visit, an ActiveX control is downloaded and installed. The application then presents them with a list of available conferences to join. It also automatically detects whether they have a microphone and Webcam available. Video is encoded using a combination of H.264 and MPEG-4, and audio is delivered using a GSM variant. The conference moderator controls the video frame rate, a useful feature in low-bandwidth situations. Currently, only other WiredRed clients can participate in the conference. The company has plans for a Session Initiation Protocol gateway later this year. E/pop Web Conferencing starts at $2,000 per year for up to five concurrent users.

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'NET INSIDER

Scott Bradner

Making all that is new old again

This Internet thing has gotten just too good for its own good. This was made ever more clear through two December events.

The FCC held a one-day forum (www.fcc.gov/voip/) in Washington, D.C., at which commissioners solicited opinions from a variety of people on what, if anything, the FCC should do to regulate VoIP.

Separately, the International Telecommunication Union (ITU) hosted the first phase of The World Summit on the Information Society (WSIS) in Geneva (www.itu.int/wsis). The meeting was held to discuss the effect of the new information-based society on different parts of the world and what new governance mechanisms, if any, are needed for the Internet.

Lots of opinions were expressed at each meeting, but there was a clear undercurrent present at both. The traditional telecom folks, both providers and regulators, seem to feel that there is no bad regulation or, at the very least, that living without regulations would be bad.

A European telecom regulator told me a few years ago: "This voice over Internet thing is not very good. It's getting better and as soon as it gets good enough we will regulate it to be sure that it stays good." I replied that such an attitude might be a fine reason to never get VoIP quite good enough to trigger such regulations. The regulator professed not to understand what I meant.

Underlying the regulator's comment to me and underlying many of the discussions at the ITU and the FCC is the assumption that the phone service VoIP provides will be just like traditional phone service. Too many traditional telecom folks seem to want to just use all the potential and flexibility of the Internet to replicate existing services. That's like forcing new wine to be presented in old bottles, to reapply an overused phrase.

Applying regulations or governance models developed for technology infrastructures that are quickly becoming obsolete is a reasonably reliable way to minimize the ability to make use of the innovation potential present in the Internet. But that is just what a lot of people seem to want to do. I guess they fear the uncertainty inherent in times of innovation.

The FCC has formed an Internet Policy Working Group to assist it in thinking about policy aspects of Internet-based telecom services, and WSIS asked that a U.N. task force be created to explore Internet governance issues. The evolution of the Internet as an engine for the future might be largely determined by the groups' work.

This might seem to be an overly pessimistic view coming from someone who has been as strong a believer in the ability of the Internet to get around the roadblocks erected by traditional telecom for so long. The difference is that the Internet is now well past the threshold where we can "just do it" and has moved into an era where we have to pay attention to the people who can put you in jail if you ignore them.

Disclaimer: Some people think that you should sometimes pay attention to Harvard even if it can not put you in jail on its own, but I do not know the university position on this topic.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.

Microsoft eyes broader market for BizTalk Server

■ **BY JORIS EVERS**

Aiming to sell more of its business integration software into more small and midsize businesses and international markets, Microsoft recently said its forthcoming BizTalk Server 2004 will support more languages and more connections in the less-expensive editions.

BizTalk Server is designed to help companies integrate disparate business applications and connect to business partners. Microsoft says it has about 3,000 customers for the product, which competes with offerings from BEA Systems, IBM, SeeBeyond Technology, Tibco Software and webMethods.

Pricing for BizTalk Server 2004 will be the same as that of its predecessor, BizTalk Server 2002, says Eron Kelly, lead product manager for E-Business Server products. The product will be available early this year, he says, a slight delay from the earlier goal of delivering the product before the end of last year.

BizTalk Server 2004, like the 2002 version, will be sold in four editions. Enterprise Edition will cost $25,000, Standard Edition $7,000, Partner Edition $1,000 and Developer Edition $750, Microsoft says. All prices are per processor, and Developer Edition can be used only for development and testing purposes.

BizTalk Server 2004 Standard Edition will let users connect to 20 trading partners and 10 internal applications, and BizTalk Server 2004 Partner Edition will let them connect to three partners and three internal applications. With BizTalk Server 2002, Standard Edition allows 10 trading partners and five internal applications; Partner Edition is limited to two partners and two internal applications, Microsoft says.

Enhancements in BizTalk Server 2004 include support for Business Process Execution Language for Web Services, integration with the Visual Studio .Net developer tool and with InfoPath and Excel, data gathering and spreadsheet products, which are part of Microsoft's Office System.

To drive adoption of Visual Studio .Net and InfoPath, Microsoft will include a copy of each product with a BizTalk Server 2004 license, Kelly says. "We anticipate customers will buy InfoPath for more users as they start to adopt it," he says.

Other features in BizTalk Server 2004 include single sign-on, a workflow engine and a business rules engine, Microsoft says. The first beta of the product was released in June. There won't be a second beta, Kelly says.

BizTalk Server 2004 will be the foundation for Jupiter, a project announced in 2002 that will integrate BizTalk with two of Microsoft's other E-Business Server products, Commerce Server and Content Management Server.

Microsoft is expanding its market reach with the new release by increasing the number of supported languages from four to nine. The product currently is available in English, Japanese, French and German. Microsoft is adding Spanish, Italian, Korean, simplified Chinese and traditional Chinese, Kelly says.

Evers is a correspondent with the IDG News Service's San Francisco bureau.

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Audio/video

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and use the same equipment."

Each iRoom is equipped with a Polycom videoconferencing system, a DVD player, a VHS player, a data projector, an interactive whiteboard and a software-based control system that ties all the components together. Dow's audio/video experts can monitor the status of iRoom equipment over the Internet.

One of Dow's goals is that all its employees — not just executives — use iRoom. At the end of last year, 10,000 of the company's 49,000 employees were trained to use the iRoom systems.

So far, Dow is pleased with iRoom, Duncan says. Network reliability is up. Video and audio quality are twice as good as with ISDN, and usage of iRoom equipment by end users is rising 10% per month.

Duncan says the biggest challenge in rolling out iRoom was cultural, not technical. It was hard to convince office managers in some locations to cede control over their conference rooms.

"People felt ownership of their conference rooms. We had to convince them that this is a Dow resource and not a personal resource," Duncan says. "We're trying to make sure that as a company we can operate consistently, we can move information and we can connect people on a global basis more easily."

Audio/visual industry experts say Dow's iRoom project is at the forefront of a trend they predict will accelerate this year.

"In terms of scale and scope, the Dow project is as big as you get," says Jerry Connolly, a technical engineer with SPLIS, a Columbia, Md., audio/video service provider working on Dow's iRoom effort. "We've seen several other large enterprises upgrading their [audio/video] systems and tying them into IP for video teleconferencing. But what makes this project unique is that it is a converged network, and not everyone is doing that yet."

For network managers, the merger of audio/video and IT systems means that they increasingly will be involved in audio/video purchases and that they need to support more voice and visual content on their networks. It also means that audio/video specialists are more integrated into IT departments.

"The AV industry is a high-tech industry," says Randy Lemke, executive director of ICIA. "We recruit more and more people with an IT background. It's not so much that we have cultural differences, but we have different skills and knowledge ... in such areas as acoustics and the distribution of audio and video."

Dow's Duncan says he spends three hours a day with the company's IT staff.

"I have the end user components, and they provide me with the communication path," Duncan says. "I'm very pleased with the way the relationship works out. But if you would have told me five or six years ago that this was going to work, I would have laughed. Both [audio/video and IT] realized three years ago that we couldn't make this converged network work without the other [department]." ■

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Special Focus

ENTERPRISE SECURITY: Identity management.

Microsoft focuses identity mgmt. effort

■ BY JOHN FONTANA

Amid the growing buzz around identity management, Microsoft is trying to pull together a platform that would offer corporations entry into a new generation of end-user management, security and regulatory compliance.

The software giant is tuning its client, servers and gateway software to align with the basic tenets of identity management, namely authentication, user management, access management and directory services. So far, the existing pieces lack cohesion and some aspects, such as Web-based access management, are missing altogether.

Thankfully for Microsoft, many competitors are facing similar construction projects. Additionally, corporate customers are far from deploying expansive identity-management platforms, preferring to focus on projects such as Web-based single sign-on.

The goal for Microsoft and others such as HP, IBM, Novell, Oracle and Sun is to provide an infrastructure that will support the federation of identities across secure corporate boundaries using XML-based Web services standards. Standardizing identity mechanisms will help cut costs, personalize access and ensure privacy.

"If Microsoft does this well — identity management on the Windows platform — and then [federates] it out to other platforms, it's the path to world dominance," says John Enck, an analyst with Gartner. "Sun, Oracle, IBM, Novell are all trying to get their act together on this. If you control your own platform you have a better chance for success."

Who are you?

Microsoft's efforts to create an identity management platform still rely on end users to do a lot of the integration work. Experts say all the features need to be part of a suite that also supports Web services standards for integrating disparate platforms.

Product	Feature	Availability
Windows Server 2003	Active Directory is repository for storing user data, policies; Authorization Manager provides role-based access controls.	Now
Active Directory/ Application Mode	Built to support single application, but can tie into full Active Directory identity services.	Now
Identity Integration Server	Provisioning tool integrated with Visual Studio.Net; SQL Server is data repository.	Now
Services for Macintosh, NetWare, Unix	Password synchronization.	Not announced
Web access management	Gap in lineup now filled by Netegrity, Oblix, Open Networks.	Now
BizTalk Server 2004	Supports system integration, workflow for creating/deleting identities. Includes some single sign-on adapters.	Mid-2004
Host Integration Server 2004	Single sign-on adapters for connecting Windows, mainframe, AS/400.	Mid-2004
Audit Collection System	Tracking tool will be added to Microsoft Operations Manager and eventually System Center.	2004
Federation Server	Server will support Web services standards for joining identities across platforms using Indigo technology being developed for Longhorn.	Now

The piece parts

In the meantime, Microsoft is banking its success on Windows Server 2003, Active Directory, Active Directory Application Mode, its recently revamped metadirectory server called Microsoft Identity Integration Server, and partnerships with vendors such as Netegrity and Oblix to fill the hole for Web access management.

Also in the mix is a mish-mash of tools the company hopes to pull together under the identity-management banner. Those include its Authorization Manager in Windows 2003, for building role-based access-management controls, Audit Collection System to track changes made to user identities or access rights, and BizTalk Server 2004 to support integration of platforms and basic workflows that help automate the creation and deletion of user accounts.

In addition, Microsoft is adding single sign-on adapters next year in BizTalk and Host Integration Server 2004 that make Windows user identities valid for accessing applications such as SAP and PeopleSoft or other platforms such as mainframes. Similar capabilities, namely password synchronization, exist today in Microsoft's Services for Unix, Services for Macintosh and Services for NetWare.

"All of this stuff is separate and it should be brought together to be uniform," Enck says. "But it's hard to pull it all together and it's not simple to implement. Today it's piecemeal and takes a lot of integration."

Identity management is gaining popularity because companies realize that network services that closely control user access to individual systems offer more security than perimeter defenses.

Proponents of identity-management systems say they make user management more affordable — through management of user information — while improving security, easing repetitive tasks such as reducing help desk calls for password resets, and dictating what users and systems have access to.

The drivers of the technology are mainly regulatory issues and legislation that require companies to protect user privacy, to ensure the accuracy of corporate financial data, and to audit and log their efforts to ensure compliance. Those pieces of legislation include the Sarbanes-Oxley Act, Gramm-Leach-Bliley Act, and the Health Insurance Portability and Accountability Act. Many companies in regulated markets are looking to develop some consistency regarding access to Web-based resources, which is a large part of how they share information.

"Companies feel they can use identity management to build standard security around the Wild West of Web development," says Jim Barrett, director of the security and integration practice at PricewaterhouseCoopers.

Microsoft and its competitors are scrambling to meet corporate needs. In 2003, IBM began tying together its suite of products — including Access Manager, Identity Manager, Directory Integrator, Privacy Manager and Directory Server. Oracle introduced its Identity Management platform including directory services and integration, provisioning, a delegated administration application, and authentication and authorization services. Novell unveiled its Identity Automation Framework, which incorporates its nSure product line that includes eDirectory, provisioning, authentication and auditing technology.

HP bought Baltimore Technologies for its Web access-management software, and Sun purchased provisioning vendor Waveset Technologies to add to its Sun Java System identity-management platform.

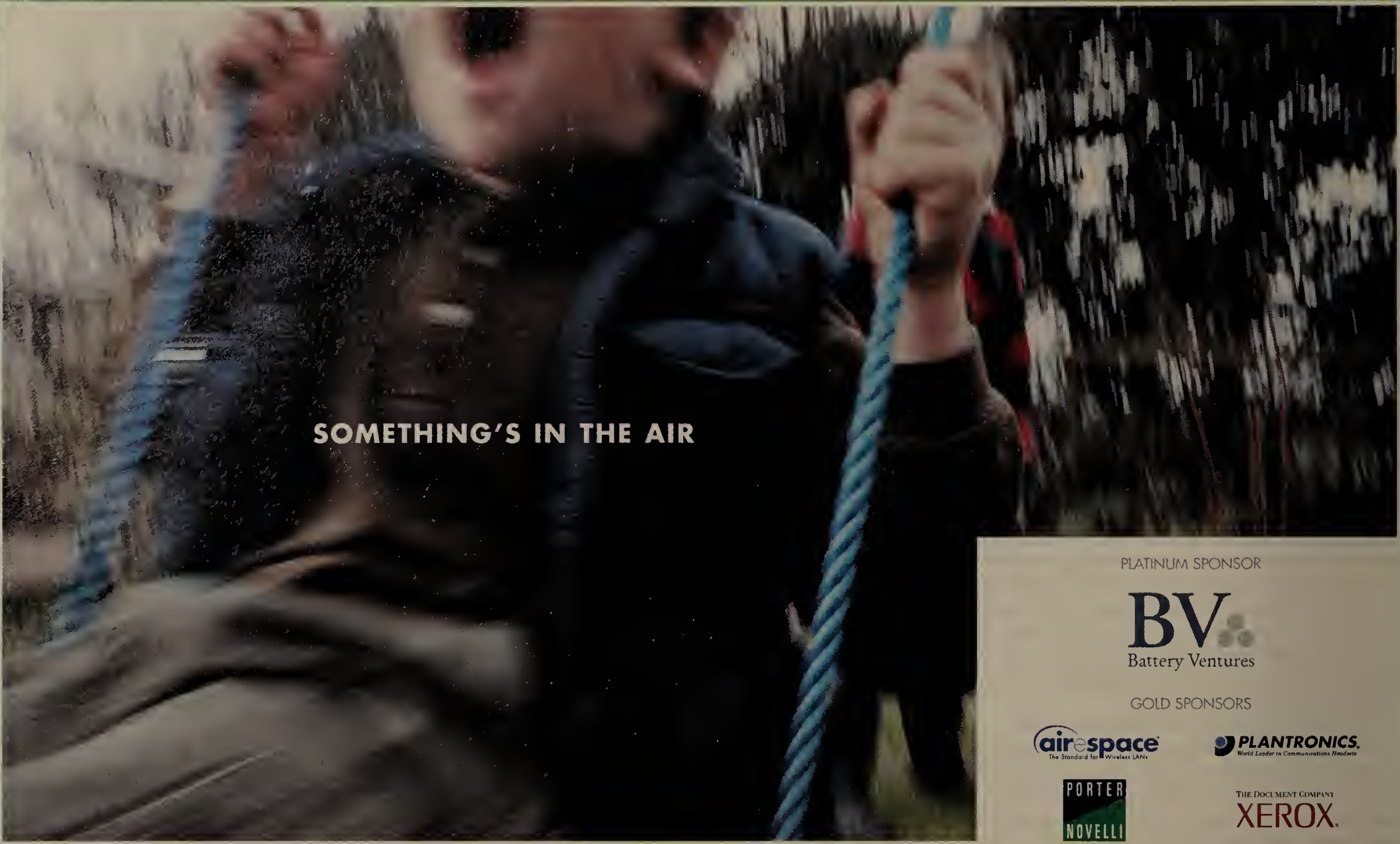
"From a pure identity-management perspective we have closed out the feature and functionality requirements," says John Fanelli, Sun's senior director of business management for system network identity, communications and portal services. "We think identity management is a two-horse race between Sun and IBM, but we are by no means counting Microsoft out."

The future

The next step is to integrate identity between companies using different platforms — so-called federated identity. To accomplish federation, vendors will have to employ a number of XML-based Web services standards, including Security Assertion Markup Language (SAML) and Services Provisioning Markup Language (SPML). IBM and Microsoft are working on a collection of protocols under the WS-Security banner that relate to identity, and Sun is a co-founder of a competing effort called the Liberty Alliance. IBM, Microsoft and Sun support SAML, but only Sun supports SPML.

Microsoft is focusing on something it calls Federation Server, which will implement Web services protocols such as WS-Security and others it is developing with IBM such as WS-Federation and WS-Policy. The server's intent is to support the exchange of identity credentials across corporate boundaries. Experts say it might be a way to eliminate the need for access-management software, which Microsoft currently does not develop in-house.

Microsoft also will add what it calls Indigo, a technology that won't be available for more than two years but will extend identity standards across clients and servers. ■



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Aviation vendor flying high with VPN

Aviall's switch from frame relay to managed VPN cited as a key to better reliability.

■ **BY CAROLYN DUFFY MARSAN**

Aviation parts distributor Aviall has experienced a major financial turnaround over the past three years that executives attribute in part to a strategic investment in Internet-based network technology.

Founded more than 70 years ago, the Dallas company is the largest independent provider of aircraft parts and related services. In January 2000, it brought in a new management team that emphasized IT investment as part of its turnaround strategy. Since then, revenue has increased from $380 million to more than $1 billion.

"We wanted the very best technology and the very best tools for our people to use," says Joe Lacik, Aviall's vice president of information services, who joined the company on the same day as the new CEO. "We proposed to the board that we invest about $40 million in technology to bring this place to where it needed to be."

That investment represented more than three times the company's annual IT budget at the time.

Included in the $40 million were purchases of new software, servers, workstations and a network infrastructure. Aviall's small IT shop — it has fewer than 50 people — initially focused on rolling out the new software architecture to 700 employees in 40 sites around the world. The software includes CRM systems from Siebel Systems, e-commerce systems from BroadVision, middleware from Sybase, and new software packages for inventory control and inventory management.

Last year, Aviall decided to replace its point-to-point frame relay network, which didn't meet the company's requirements.

"We were experiencing very poor reliability in the field," Lacik says, adding that the company averaged only 93% availability but needed to support around-the-clock operations. "We were putting a lot of the remote sites out of business every day."

The legacy network also lacked many of today's common network management features.

"We had no alerts, no alarms, no monitoring, no capacity planning," Lacik says. "We only had what we could put together with our skills . . . and we have only one WAN engineer."

Aviall chose an Internet-based VPN and outsourced the management of it to a service provider. Migrating to IP made sense for Aviall because one of its business units runs a successful electronic marketplace that offers 5 billion parts used in the aerospace, marine and power utility industries.

Aviall executives created a detailed RFP, and five top-tier service providers bid on the job. Aviall signed a four-year, $7 million contract with Equant, which earlier this year connected the 40 Aviall sites to the new VPN.

Aviall executives selected Equant because of the service provider's Multi-protocol Label Switching (MPLS) footprint and strict service-level agreements. But Equant wasn't the lowest bid.

"We didn't make the decision on price,"

See VPN, page 26

Short Takes

■ About 25 million users around the world signed up for **DSL** services last year, bringing total subscribers to 62 million, according to a report by consulting firm Point Topic done on behalf of the DSL Forum. Japan leads the way with 9.2 million subscribers, followed by the U.S. at 8.2 million and China with 7.8 million (5.6 million of whom signed on last year, giving China the highest growth rate).

■ **U.S. businesses** spent $161.5 billion on **wireline voice and data telecom services** last year, according to estimates from Insight Research. The biggest spenders were companies in four vertical industries: wholesale trade; financial, insurance and real estate; professional business services; and communications. These industries accounted for 68.5% of 2003 corporate telecom expenditures, according to Insight. The firm recommends service providers develop more industry-specific services to attract customers from top-spending sectors. Overall, corporate telecom spending will grow to $234 billion by 2008, Insight says.

Sonus touts network border switch

New software key to linking carriers' IP networks.

■ **BY TIM GREENE**

Sonus Networks is introducing software that lets its switching gear connect phone calls between IP networks run by different carriers even if the networks use different protocols.

In doing so, Sonus is naming a new category of network device — the network border switch — that it says is needed to link carrier IP-voice networks in a streamlined fashion.

While carriers can tie the signaling and control for phone call sessions and internetwork security using existing session controller gear, Sonus says its new software called Network Border Switching is better suited to the task.

The software runs on Sonus' existing GSX 9000 Open Services switch and its Insignus Softswitch hardware platforms, boxes that also can perform switching functions, avoiding the need for extra devices in their networks.

The software can translate signaling from a network that uses the H.323 standard and one that uses Session Initiation Protocol. This is necessary if the two networks are to set up and control calls.

Carriers must resolve private IP addresses of IP phones with those of the firewall that protects them, something some firewalls can handle and that can be resolved by session controllers, which are separate devices.

These separate controllers also handle signaling protocol translations. They are made by companies such as Acme Packet, Kagoor Networks, Netrake, NexTone Communications and SnowShore Networks.

Using network border switches can avoid the need for traditional voice switches at the junction of carrier networks. Typically, a carrier using IP to carry voice on its network converts the traffic to TDM in a tandem switch that connects to a similar TDM tandem in the other carrier's network.

Carriers can accomplish the same ends, but it takes multiple devices, Sonus says. Putting the features of many such devices on one piece of hardware simplifies networks and reduces maintenance costs, along with the need for power and space. It also can reduce provisioning time be-

See Sonus, page 26

IP-to-IP isn't easy

Carriers trying to connect their IP voice networks with those of other carriers face a string of challenges.

Maintaining quality of service: Carriers must understand markers used by their peers to designate voice-quality service and tag packets accordingly.

Keeping call records: Details of which customers make use of the networks must be gathered, maintained and shared in a format compatible with billing software.

Resolving addresses: The networks must support network address translation to deliver traffic to devices with private IP addresses that sit behind firewalls.

Handling signaling differences: Calls initiated using H.323 signaling must be able to cross networks where Session Initiation Protocol signaling is used.

Minimizing delay: Protocol conversions and re-forming of packets can't be allowed to introduce enough delay to hurt voice quality.

EYE ON THE CARRIERS

Johna Till Johnson

New Year's resolutions for telecom managers

2004 is definitely looking up. All indicators point to an expanding economy, and "growth" is the watchword of the moment. So what can telecom managers do to ensure their next 12 months are as successful as possible? Herewith, our annual New Year's telecom resolutions:

1. **Assess your remote-office connectivity.** Companies that participated in a recent Nemertes Research benchmark say that more than 75% of their employees work remotely. Yet many corporate networks are still designed to link headquarter offices with best-effort connectivity to peripheral sites (particularly home offices and mobile workers). That won't cut it in today's distributed environments.

2. **Aggressively investigate emerging options for remote workers, such as Secure Sockets Layer IP VPNs and Wi-Fi 'hot spot' services.** Make sure you're capturing all associated costs (those $10 per day hotel-room Internet charges really add up) and most importantly, remember remote users need voice as well as data connectivity (see resolution No. 5).

3. **Revisit your data center network architecture.** Paradoxically, the other significant network change is occurring at the core: the data center. As organizations consolidate data centers, the demands on core networks have increased. Bandwidths are climbing to the 10G bit/sec range and beyond, and virtualized, multiple redundant architectures are becoming common. In short, it's time to do a network "technology refresh" of the data center.

4. **Secure the "cloud."** Perimeter defense is necessary but not sufficient. Recognize that your organization is almost certainly exposing some of its resources to external users, and take steps to make sure this is done prudently (and audibly). Benchmark who's touching your routers, switches, servers, databases and applications — and why. Revisit your security policy in light of what's going on in your organization. Make sure you've got a viable identity-management scheme in place to protect vulnerable resources

5. **Benchmark your application performance.** Sure, it's almost never the network's fault when an application is performing poorly. But can you prove it? Step one in ensuring optimum application quality management is putting in place an effective application-performance program, one that looks at an application's performance end to end (from the user's desktop or palmtop all the way to the database queries).

6. **Investigate IP telephony and Wi-Fi.** Many IT executives report IP telephony and Wi-Fi are adding significant "hard-dollar" benefits to their companies in the form of measurably improved productivity. The benefits are greatest when it comes to remote and mobile workers, who find the combination of voice and wireless lends dramatically increased flexibility and responsiveness.

7. **Benchmark your telecom disaster-recovery capabilities.** As resources are centralized and workers are distributed, network resiliency becomes even more critical than before. As part of your regular contract-renewal process, you'll want to ask service providers to fill in the details of their disaster-recovery capabilities. You'll also want to assess how well your internal design ensures resiliency: Do you have viable alternatives for voice and data, particularly out to remote sites?

Best wishes for a happy, healthy, prosperous 2004 to all!

Johnson is president and chief research officer at Nemertes Research, a leading independent technology research firm. She can be reached at johna@nemertes.com.

VPN

continued from page 25

Lacik says. "Some of the big carriers were so desperate that they really lowered their prices. We chose them for their reliability and their accountability."

Because of the drop in pricing for IP VPNs, Aviall was able to purchase a larger and more flexible network along with the managed services for slightly more than the cost of operating its old frame relay network.

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Aviall's focus on service and reliability over price is becoming more common in IP VPN purchases by U.S. corporations today, analysts say.

"Applications are driving VPN purchases," says Vijay Bhagavath, telecom analyst with Forrester Research. "It used to be the case that network executives wanted to save a few dollars over frame relay. Now everyone is asking if the VPN can support voice and if it can support CRM."

Equant provided Aviall with a fully managed, high-speed VPN that carries the company's data, fax and some voice traffic simultaneously. The network offers five classes of service so Aviall can prioritize mission-critical applications.

Meeting expectations

Aviall's new VPN has been up and running for more than six months, and so far Lacik is happy with Equant's service.

"With Equant, we have very precise points of control," he says. "We had a couple hiccups during the installation. Not only did they solve the problem, but they shared the financial load."

Lacik also is pleased with the reliability of Aviall's VPN.

"Since we put Equant in, our reliability is 98% and climbing," Lacik says. "Now I don't have network issues. I have application issues. But I'd like the network reliability to be at 99.9%."

"We were putting a lot of the remote sites out of business every day."

Joe Lacik
Vice president of information services, Aviall

The only drawback of Aviall's outsourced VPN is that the company has lost the ability to control its own routers. Initially, the company's WAN engineer was worried about this feature of MPLS.

"Some of the pushback was from our WAN engineer, who could see the routers but not access them. He was pretty violently opposed to that. But when we explained that he wouldn't have to do the router configuration but that he could still manage the capacity, he saw that this [feature] actually enables him to do his job better," Lacik says. He adds that the switch to an MPLS VPN "definitely requires some cultural changes" for network managers.

Aviall isn't alone in its move to IP VPNs.

"My outlook for the IP VPN market is bullish because of VoIP and back-office applications," Bhagavath says. "IP VPNs are getting a lot of momentum."

Next up for Aviall is migrating its voice traffic to the Equant VPN. Some of the company's branch sites are piloting VoIP services.

"Within three years we will go to a fully converged network," Lacik says. "The way our branches work in North America is that if a site goes down or the phone rings more than three times, the phone call automatically gets routed to our hub in Dallas.... We want to tie all of remote sites to Dallas with VoIP."

Aviall executives say that their VPN and their new application architecture played a major role in the company's turnaround. The VPN helped "quite a bit because we don't have the downtime," Lacik says. "Every time we had those outages, we lost revenue. I don't know if I could put a dollar figure on it, but it represents a percentage of the increased revenue." ■

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Sonus

continued from page 25

cause there are fewer devices to configure.

Network simplicity is key to major carriers because they are faced with layoffs to improve their profits, says Christine Hartman, research director for voice over packets at Probe Group. "What they want is fewer boxes, and they want the right ones in the right places," she says.

IP-to-IP peering can cost as little as 20% of the price to convert the traffic to TDM and then back to IP to cross network boundaries, she says.

Carriers have yet to work out IP voice peering between their networks, she says, mostly because of business reasons rather than technical reasons. "The hard part is coming to agreements on security, isolating trouble and who pays whom, more or less. Once the first few agreements are set, the others will fall in," she says.

She credits Sonus with being the first softswitch vendor with this border switching ability. She says carrier phone switch vendors Lucent and Nortel have told her it is on their to-do list.

Pricing for the software has not been set, but the company says it will be based on how many simultaneous sessions the customer wants to support. The price for small deployments will be similar to the price of session border controllers, but will be less per session for larger deployments. ■

Net.Worker

■ PRODUCTS, SERVICES AND STRATEGIES FOR TYING TELEWORKERS TO THE ENTERPRISE

Adventures in Web development

■ **BY KEITH SHAW**

If you run a small business with limited staff, the job of upgrading your Web site from "brochureware" to one where customers can actually buy things is daunting. If you're like us, you don't have the time or patience to learn HTML or deal with large HTML editor applications such as Microsoft's FrontPage or Cold Fusion. Fortunately, we've found some tools that can give HTML novices a leg up, as well as drive site traffic and revenue.

We tested tools from Interland, Scorpio Software and Elibriz Software. Head online for lists of dozens more, with guidance on picking out what you need (see www.nwfusion.com, DocFinder: 9133).

Web-based site builders

Any Web hosting firm worth its salt should offer Web site building tools. If yours doesn't, consider taking your business elsewhere. One host with excellent site-building tools is Interland (www.interland.com). Recently, the company launched its Platinum Business Services. For $95 per month, Interland provides a custom-designed Web site, as well as one-on-one consulting that helps you market products and services, enable online transactions, and talk to customers and prospects.

At the heart of the service is Interland's Site Builder, a Web-based Web-site creation tool that helps you build a site using a variety of templates, tools for site promotion such as e-mail newsletter creation, keyword and yellow page advertising, and e-mail account management.

The Platinum service includes a 10-page Web site, e-commerce features such as shopping carts and secure payment processing, a search-engine submission tool and marketing tools to help generate revenue. You also get a domain name for two years and an e-mail account with up to 50 mailboxes.

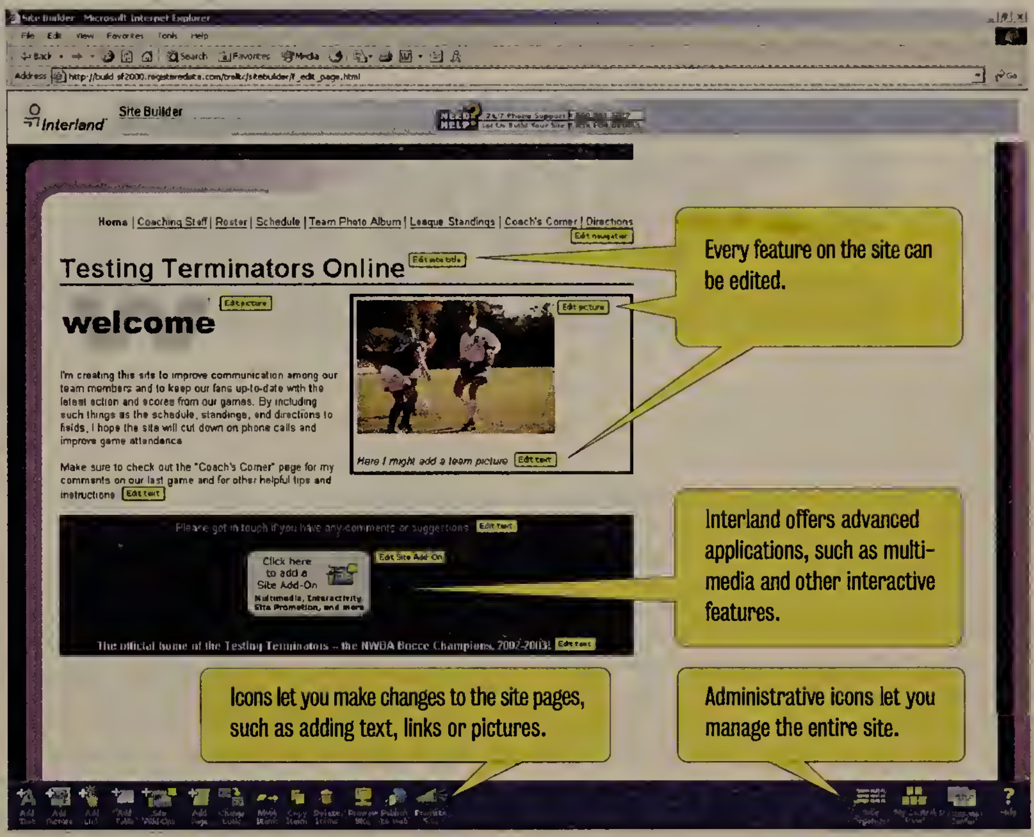
Using an Interland-provided demonstration account, we set out to build our site. To get started, Site Builder offers templates for businesses ranging from accounting to hair salons, so there's probably one to fit your needs.

Because the tool is Web- and icon-based, you just click to add pictures, text or other content. The templates include sample text that you edit. We got the hang of them quickly and completed a fantasy football "team page" in about three hours. The site offers clip art and designs that aren't the best quality, but you'll probably want to skip them and add your own photos and art anyway. You also can click a button to see the HTML code and edit it.

When you've completed the design, a one-button click publishes your Web site. Now you're ready to promote it. Interland offers some great tools to help small businesses handle search engine submission, gift certificate creation, e-commerce and other business-related needs.

No experience required

Interland Site Builder's templates and editing tools help tech novices create professional Web pages.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Testing Terminators Online

welcome

I'm creating this site to improve communication among our team members and to keep our fans up-to-date with the latest action and scores from our games. By including such things as the schedule, standings, and directions to fields, I hope the site will cut down on phone calls and improve game attendance

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Every feature on the site can be edited.

Interland offers advanced applications, such as multimedia and other interactive features.

Icons let you make changes to the site pages, such as adding text, links or pictures.

Administrative icons let you manage the entire site.

Getting noticed

A great Web site isn't worth much if no one can find it. So the next big step is to get search engines to increase your site's "hit rating" so when people perform searches your site comes up. During our adventure we tested two software products aimed at helping you reach more eyeballs.

Scorpio Software's Golden Keywords 3.0 finds the best keywords for your Web site, based on an Internet search of popular keywords used at other sites, plus a user-based ranking on the phrases it finds. A feature takes the top keywords and exports them into a text file that you cut and paste into your own pages.

The application installed quickly and easily. But the "getting started" help file was Spartan, which meant we had to fumble around pushing buttons to figure out the steps and what it all meant. The application was somewhat helpful — coming up with a few keyword phrases we hadn't considered for our site. The software has a 10-day evaluation period; after that it costs about $35. Go to www.scosoft.com for more details.

Rather than generating keywords and phrases, another approach for generating hits is to use a Web site analyzer. These products scan your Web site for the most relevant and popular keywords and phrases. We tested Elibriz Software's Site Content Analyzer 2.0. The tool was a breeze to use; we simply typed in the URL we wanted analyzed, pushed a button and the software did the rest.

But in our test, the software came up with words that were irrelevant to a keyword search, such as "http" and "color_green." For some reason it picked up the file names of the images. So after running a scan, you'll need to tell the software to ignore certain phrases. The software costs about $80, and a 30-day trial download is available. Go to www.sitecontentanalyzer.com for more details.

Site Content Analyzer was an interesting way to find which words were most popular. But we preferred Golden Keywords' approach of generating new keywords. That said, Web site analyzers are useful for seeing what keywords your competitors are using (so you can use them too), so you might want to use both. ■

Short Takes

■ **Linksys** has announced a network-attached storage device for small businesses. **The EtherFast 120GB Network Storage Device** with **PrintServer** provides file and printer sharing, Web-based management and a back-up utility. A second bay lets you add a 250G-byte disk drive to increase capacity to 500G bytes. The device includes a 10/100/1000M bit/sec port for connecting to a Gigabit backbone and can be connected to an 802.11b/g network via the Linksys Ethernet Wireless-G Bridge. It works on Windows networks and costs $849.

■ **EarthLink** for a limited time is offering **free Linksys Wireless-B routers** to customers who sign up for **Earthlink Home Networking Service.** The broadband provider also plans to sell Linksys Wireless-B routers and adapters, and Linksys Wireless-B Game Adapters for Xbox, GameCube or PlayStation 2. Pricing for the Wireless-B equipment hasn't been announced. The game adapters cost $80.

■ **D-Link** recently announced a wireless version of its **i2eye Video-Phone,** a device that lets you display video calls on a television via a broadband connection. Adding an 802.11b/g radio means the device can work with TVs untethered to the broadband modem. The device allows for video-streams of up to 30 frames per second. It costs $249.

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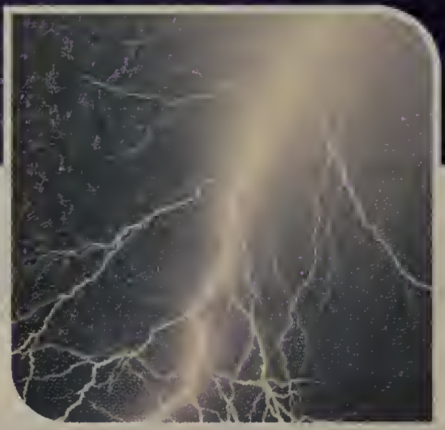
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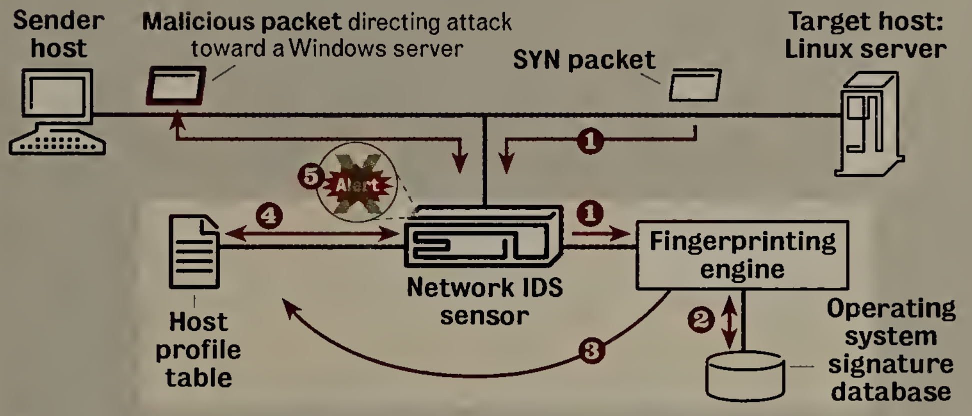
New IDS tool fends off false positives

BY ANDRE YEE

HOW IT WORKS

Passive fingerprinting

An IDS with a passive fingerprinting engine reduces false positives by identifying the target host and determining if it is vulnerable to a particular attack. If the host isn't vulnerable, the alert notification is suppressed.


Sender host
Malicious packet directing attack toward a Windows server
SYN packet
Target host: Linux server
1
5
Alert
4
1
Fingerprinting engine
Network IDS sensor
Host profile table
2
3
Operating system signature database

① Fingerprinting engine inspects SYN packet headers for specific identifiers.

② The target host operating system information is gathered from the signature database.

③ The system updates the profile table of IP address and host information.

④ The sensor detects a malicious packet and checks it against the profile table before sending an alert.

⑤ The sensor determines that the malicious packet was directed at a Windows server and the Linux host is not vulnerable to attack, so it suppresses the alert.

Intrusion-detection systems are a key component of a multi-layered security architecture. However, the use of network IDSs has been hampered by less-than-perfect detection and a preponderance of false-positive alerts, which report attacks when no vulnerability exists or no compromise has occurred.

As a result, some security administrators have questioned the value of existing IDS deployments.

In response, a next generation of IDS products known as passive fingerprinting is emerging.

Passive fingerprinting identifies information regarding target host systems within a network. The IDS gathers critical data such as operating system, services, and in some cases applications running on the host, and uses this information to reduce false positives.

Cross-referencing

When an IDS detects a packet containing possibly malicious traffic, the IDS cross-references it against the target host vulnerability profile to determine if the host is vulnerable to the potential attack. If the host is deemed not vulnerable, the alert notification is suppressed. For example, the IDS would suppress an alert regarding a Windows Remote Procedure Call-based attack targeted at a Linux server when it determined that the targeted host was not vulnerable.

Passive fingerprinting works by comparing key TCP and IP header information from the sender host with a "signature" database containing specifics of the target host. The most common header identifiers are window size, time-to-live, DF bit, and total length:

- Window size (wSize) refers to the size of the incoming packet buffer. The operating system typically sets the wSize parameter at the beginning of a TCP session. Most Unix operating systems such as Linux or Solaris keep the wSize parameter static through the TCP session, but Windows operating systems tend to change window size value during the session.
- Time-to-live (TTL) is another parameter that provides useful insight into the host operating system. Operation systems set different defaults in the IP header value for the number of hops a packet may take before it is dropped. For example, a TTL of 64 would indicate that the host is likely running FreeBSD or Linux, and a TTL at 128 would indicate that the host is probably a Windows box.
- The don't fragment (DF) flag is not quite as useful an indicator as the previous two parameters because most operating systems will set the DF flag by default. However, it might be viewed as a "by exception" indicator because only a few operating systems such as OpenBSD actually leave the DF flag unset.
- Total length is a field that indicates the length of the packet, including IP header and payload. It serves as a valuable identifier because some operating systems can be denoted by the default total length value of the SYN and SYNACK packets. These are the total packet lengths for each primary operating system: Linux (60), Solaris (44) and Windows 2000 (48).

None of these parameters can determine the sender hot profile on their own. But when an IDS collectively assesses these indicators against an operating system's fingerprint signature database, the analysis often accurately determines the host operating system and services.

For example, the IDS fingerprinting engine examining a packet with a TTL of 64 will narrow down the possible operating systems to either Linux or OpenBSD because both share identical TTL values. However, validating the wSize value will differentiate between Linux and OpenBSD. The combination of indicative parameters is what offers a reliable "signature" of the operating system in question.

By accounting for whether the targeted host is vulnerable to a given attack before generating a security alert, false positives are dramatically reduced.

The result is a new generation of IDS products that deliver more accurate detection.

Yee is the president and CEO of NFR Security. He can be reached at ayee @nfr.com.

Ask Dr. Internet

By Steve Blass

We're having problems with open relay on Microsoft Exchange Server 2000. We tried to shut down SMTP, clean out queues, turn off relaying, etc., but nothing worked. For a quick fix, we set up a temporary mail server using Mdaemon. Is there a less drastic way to close the open relay on MS Exchange Server? How do we prevent this?

Exchange relaying has received a lot of attention lately. Two Microsoft security bulletins about the troubles are: Microsoft Security Bulletin — MS02-011, Authentication Flaw Could Allow Unauthorized Users To Authenticate To SMTP Service; and Microsoft Security Bulletin MS99-027, Encapsulated SMTP Address Vulnerability. If your server is falling victim to authentication spoofs, closing the open relay might not stop the spam. Patch your Exchange server with the latest fixes and service pack, then open up the Internet mail service and choose routing. Under Routing Restrictions, turn on "host and clients with these IP addresses" and leave the list empty. More information is available from Microsoft (details at www.nwfusion.com, DocFinder: 9127). You can test your mail server using telnet to Port 25 after making your changes to verify you can't send relayed mail.

Blass is a network architect at Change@Work in Houston. He can be reached at drinternet@changeat work.com.

GEARHEAD
INSIDE THE
NETWORK
MACHINE

Mark
Gibbs

Platforms for testing and publishing

Sometimes you just need a simple test platform to check out Perl or PHP applications as either stand-alone apps and Web scripts. We just discovered a cool open-source system that offers exactly that: IndigoPerl from IndigoStar Software (see details at www.nwfusion.com, DocFinder: 9128).

IndigoPerl (released under the Gnu Public License, GPL) consists of the Apache Web server, Perl and PHP, along with an installer and supporting scripts, all designed to run under 32-bit versions of Windows, including Windows 95/98/ME/NT/2000/XP. In operation, the system is not too heavy on memory.

As the publishers point out, "You can easily customize or repackage [IndigoPerl] for redistribution with additional modules.... It comes without a restrictive license — you can do whatever you want to do with it ... Does not install files in Windows directories ... Does not keep data in registry, except for Apache service information ... Uses text files to keep configuration information ... Multiple versions can be kept on the same PC [and] can be installed on multiple computers with a simple copy."

The Perl subsystem comes with some of the most popular Perl modules prepackaged, including Archive-Tar, Compress-Zlib, DBD-mysqlPP, DBI and HTML-Parser. There also is a browser-based management interface called Perl Console, which provides browser access to the Perl help files, the documentation search interface and the GUI Package Manager.

GUI Package Manager is a great feature. It downloads a list of Perl modules from an archive on Indigo's site and presents them along with a list of all your installed modules. You can add modules from the online archive or remove local modules. There also is a command-line version of the tool.

Apache server is pre-configured for running Perl and PHP Common Gateway Interface scripts and comes with Mod_perl (which provides a persistent Perl interpreter in the Web server) pre-installed.

Installation is painless — unpack the archive and run the installer. Then fire up your Web browser, point it at http://localhost/ and you should see the home page with test scripts. But how about all those applications that need a database? How are you going to test them without one? Why don't we go for, say, MySQL?

Go to DocFinder: 9129 and grab the Windows version. Installation for MySQL is a little more complex, but with a little help from the manual you should be able to get it up and running.

Now go back to the Indigo installation home and click on the MySQL "Pest script" link (yes, that should be "Test script" but hey, it's free). Voilà! You now have a complete Web/Perl/PHP/MySQL test platform.

But wait! Here's another combination platform. This one leaves out Perl (it would be easy to add) and it focuses on content management. The platform is called eZ publish 3 from eZ Systems (see details at DocFinder: 9130). It's not only a content management system, but it's also an application server.

EZ publish 3 is amazing. For Unix systems (including Linux, Solaris, HP-UX and FreeBSD), Win32 systems (eZ Systems cites Windows 98, NT and 2000, but XP also works fine), and Mac OS X, eZ publish 3 can be installed with all its support subsystems (Apache, PHP, MySQL) or added to an existing installation with those services.

Among the basic features are browser-based publishing, role-based user permission system, content version control, multilingual content support, multimedia and image handling and localization support. The system also includes e-commerce features such as product catalogs, order management support, credit card integration interface and tax calculation support.

There is a software development kit with full API documentation with Unified Modeling Language diagrams, tutorials, template code documentation and all you need to extend eZ Publish with wild abandon.

The product can support multiple sites, includes templates for seven different site content models, and has a great management interface. We've only just started to come to grips with the product but we're already wildly impressed.

EZ Publish is dual licensed, allowing its use under the GPL, which means it's free, or under the eZ Publish Professional Licence, which lets you make derivative commercial products based on eZ publish. The latter costs $3,900 for the first developer and $1,950 for each additional developer.

Publish your mental contents to gearhead@gibbs.com.

CoolTools

Quick takes on high-tech toys

By Keith Shaw

Cutting the office phone cord

The holidays are over and we have to get back to work. But we still like cool stuff to help us get our work done. It's our first column of the new year and we've already found a cool product.

Plantronics headsets have been around for a while, giving users the ability to talk on the phone without using their hands, or the dreaded head to shoulder scrunch. The headsets provide the look and feel of "Judy, the Time/Life Operator," but for people who are on the phone constantly and need to use both hands, it was worth the stylistic sacrifice.

The problem with these headsets was that they were connected to the phone via wires. If you needed to move around the office (or go to the bathroom), you needed to take off the headset.

Because everything else now is wireless, why not create a wireless headset that gives hands-free and mobile access to the user? That's what Plantronics has done with its new CS50 Wireless Office Headset System. The $300 device includes a base station that connects to your phone and a headset that looks like the company's Bluetooth hands-free headsets for a mobile phone (an over-the-head attachment is included if you prefer the classic "Judy" look). The base station also acts as a charger for the headset.

Setup was relatively easy, as long as you are patient connecting the handset phone cord to the tiny and cramped phone jack on the base station.

After charging the headset (the documentation recommended three hours), we could then configure the system to work with the phone.

We also received the optional handset lifter (the $80 HL-10), which connects to the side of the phone and lifts up the handset automatically when you tap the headset's answer call button. This was one of the coolest features of the phone, and was a great party trick we could show to co-workers (stand away from the phone, press our headset and watch the handset magically lift).

The headset transmits over the 900-MHz frequency, the same as some older cordless phone systems (range is up to 300 feet). I could walk from my office to the employee break room (and bathroom), but couldn't walk the entire length of our building.

A cool feature is that when you start to walk out of range, the headset will give you some warning beeps.

Plantronics says a fully charged headset offers up to eight hours of talk time, so you should be able to get through a workday without recharging. Of course, take the headset off occasionally if it gets too uncomfortable, and recharge it while you wait for the next call.

Voice quality over the headset was very good — we could talk and hear the other person quite clearly, as if we were using a regular mobile phone headset. It wasn't as good as the sound on a regular phone, but we're willing to sacrifice a bit of that for the hands-free and extra mobility.

When we were talking to other co-workers and a call came in, the headset would beep and we would be able to answer the phone. It's a good way to eliminate playing voice mail phone tag, as we usually get phone calls whenever we're away from our desk.

One quick note — people might give you strange looks if you're walking down the hall talking to yourself, but if you've used a mobile phone headset you probably are already accustomed to that.

Also, we don't recommend taking calls in the bathroom, for obvious etiquette reasons.

Now if we could just get a headset that connects both to the office phone system and to our mobile phone, we'd have one headset we could wear all day. We have a feeling we might be seeing those in the future.

Shaw can be reached at kshaw@nww.com.

Plantronic's headset isn't just hands-free, it's also wireless.

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opinions!

EDITORIAL

Network World staff

10 predictions for 2004

A few weeks ago we reviewed our 2003 predictions (we got about 70% right), and now it's time to venture forward with predictions for the new year.

- Presence becomes the central focus in collaboration and the major vendors revise e-mail interfaces to create dashboards that incorporate the usual e-mail stuff plus instant messaging and links to the voice world. Expect standards work and vendor alliances.
- Wireless LANs (WLAN) advance as questions about security ease. Wi-Fi Protected Access, a subset of the 802.11i security standard that is expected to be finalized mid-year, is viewed as an adequate replacement for the flawed Wired Equivalent Privacy standard, and companies start to invest in earnest. Expect to see the federal government back 802.11i as the preferred WLAN security model.
- For '04 Oracle has promised to deliver Oracle on Sun servers that are powered by AMD processors running Solaris or Linux. This is yet another sign that the future belongs to highly-scalable, low-cost systems built with commodity components. What is less clear, as IDC points out, is how the shift will affect IBM, HP and Sun. As part of the trend, look for continued growth in blades and more noise about 64-bit architectures, but it is still early for both.
- The SCO Linux legal mess comes to a head and results in IBM paying SCO a lump sum, but users balk at paying SCO license fees and several court cases result. Meanwhile, Linux on the desktop gains support in some big domestic contracts, making Redmond nervous.
- While VoIP suffered a few setbacks last year — Merrill Lynch stepped back a bit and security questions moved to the fore — the installed base of TDM PBXs just got a year older, and they won't be replaced with traditional gear. Look for product refinements and deals with software vendors as the market shifts to a focus on applications.
- Despite another year of courtship and brinkmanship, no large telecom deals go down in '04. But the clock is ticking; AT&T, MCI, Qwest and others are still in trouble.
- The recently announced Cisco Network Admission Control program — which promises to safeguard networks by blocking access for desktops that don't have updated virus software — stumbles as the industry looks instead for an approach built on standards.
- Offshore outsourcing, what some are calling offsourcing, unexpectedly trips as the noise level increases about the downsides, including broad security issues and shoddy workmanship.
- Utility computing is still years away, but concrete announcements are made and the vision for how we get there starts to come into focus.
- With VPNs now widely used for remote access, customers look to Internet-based site-to-site VPNs to replace more-expensive frame links.

Factor in human nature

Regarding Mark Gibbs' column "The other side of IT vision" (www.nwfusion.com, DocFinder: 9122): The simple reason for the lowest common denominator in IT infrastructure is due largely to two factors: the competitive marketplace (cost) and familiarity.

I've noticed the human trend to buy/sell what you know. As a programmer, I'll tend to stick with the tools I like. Why extend myself to learn something more advanced or efficient when I can just use tools like Visual Basic? Besides, it's what everyone else is using.

The old mainframe/mini mentality of throwing faster hardware at poorly written code to improve efficiency also has moved to PCs. Memory has gotten inexpensive enough and processors fast enough that efficient coding isn't required as much for common business applications. "Just wait for the next processor release and it will be fast enough" is the mantra.

This might be computer infrastructure, but it's still subject to the human tendencies toward laziness and cheapness. The counterculture of the old days, the badges of honor for doing something new and difficult, are wearing away quickly. We're not in college anymore and the pressures of getting the kids to soccer practice, maintaining a household and feeding the dog are as big or bigger a concern than whether an automated subroutine is squeaky clean.

Todd Sharp
Network engineer
XO Communications
Dallas

Comdex outgrows its roots

Regarding "Smaller Comdex alive and well, organizers say" (DocFinder: 9123): I'm a bit vexed at the positive press Comdex has gotten these past few years. I only missed one Comdex from 1982 through 2002 and specifically chose to miss this year's and future shows until things change. Through the mid-1990s, Comdex was the place for all new, emerging companies to show their wares. It was the place for anyone who wanted to meet the faces behind the phones, ads and products and get the lowdown on what would be available in the near future. That drastically changed in the late 1990s, when the cost of even the smallest, most meager booth went through the roof. The only way for the little guys to exhibit was to mortgage the farm and sell off the animals.

The organizers of Comdex are doing the industry a large disservice by catering only to those companies large enough to afford full-page ads in the trade magazines. Those large companies are not the ones responsible for the majority of innovation in our industry. Our industry cannot grow and meet the needs of consumers without recognizing and encouraging the up-and-comers. We need a show that will get back to basics. If the only people the organizers of Comdex want to attract are the large corporate types, both as attendees and exhibitors, they will die the much-deserved death they're currently experiencing.

Bob Compton
Via e-mail

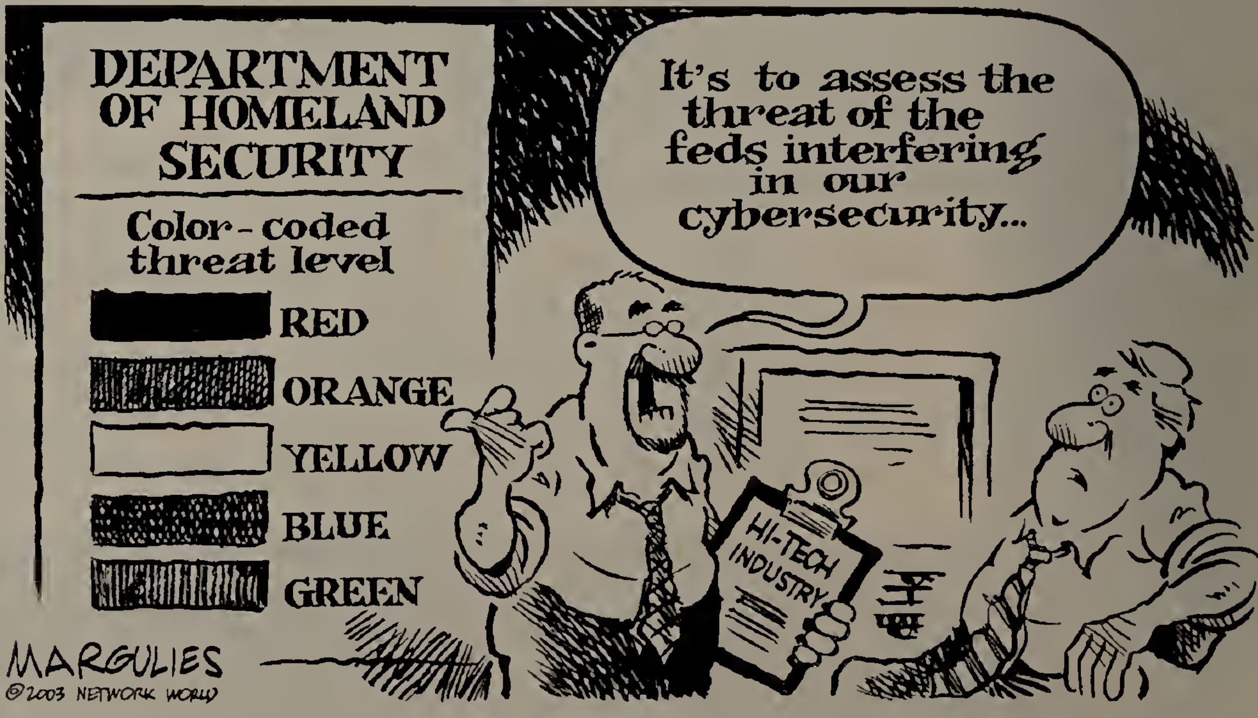
E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

Spammers should be responsible

Regarding "Congress set to enact opt-out spam law" (DocFinder: 9124): A much better approach would be to allow one message to be sent unrequested with an opt-in response required for future mailings. Then hopefully the messages would die out when no response is received. Requiring recipients to respond to every message to opt out is a task they should not have to do. Responsibility should rest on the shoulders of the advertisers.

John Kiewiet
St. Petersburg, Fla.

More online! www.nwfusion.com Find out what readers are saying about these and other topics. **DocFinder: 9121**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USER VIEW

Chuck Yoke

IPv6 finally piques interest

If you have been reading my columns for a while, you know I have not been very enthusiastic about IPv6. While the technology is superior to IPv4, there has not been a good business case to consider IPv6 on a large scale in the corporate world.

That might be about to change. Converged networks, intercompany extranets and network security are creating scenarios in which IPv6 might not only be the best technology, but also the best business decision.

The most-touted advantage of IPv6 always has been increased address space. While I previously argued that IPv4 private addressing and network address translation (NAT) provided more than enough addresses for most corporate implementations, the projected growth in converged networks could make that argument invalid in some cases. Converged networks would increase the amount of addresses needed. Additionally, increased inbound and outbound traffic would increase the load on NAT devices, which could create performance issues. As converged networks require low latency in order to provide acceptable voice quality, NAT devices could become network bottlenecks that affect voice service. IPv6 with its extended address space can eliminate or significantly reduce the need for NAT and provide for native transmission to the Internet. This will enhance the network's ability to provide high-quality inbound/outbound IP voice and video services.

Converged networks also would require effective quality-of-service (QoS) mechanisms to ensure that real-time traffic needs are met. IPv4 can provide these today via add-ons, but IPv6 can provide native QoS via the flow label. This IPv6 header field provides the ability to identify and prioritize packets belonging to specific flows. Because the flows are identified within the IPv6 header, prioritization can be supported with IP Security data encryption — a task that is difficult with IPv4.

Increased interbusiness communication also is creating scenarios in which IPv6 could be the best value. Even in today's environment, implementing extranets with IPv4 private addressing can be challenging. If two companies use the same private address space in their internal networks, one will have to implement NAT to complete the connection. This can lead to increased costs and delayed implementations, which can put potential revenue or business growth at risk. IPv6 will increase the number of publicly registered addresses, thus eliminating the need for NAT in many circumstances and facilitating faster implementations of interbusiness connectivity.

Migrating to IPv6 does have drawbacks. Implementing IPv6 will require careful planning, a thorough review of the network's architecture and a detailed migration plan. Training will be needed for architectural and operational personnel, and interoperability with existing IPv4 implementations will need to be maintained for quite a while.

IPv4 will be around for a long time and will still be the protocol of choice for many implementations. However, as legacy equipment becomes fully depreciated and network upgrades can be financially justified, the potential benefits of IPv6 need to be considered to see if it has a role in the overall technology strategy.

Yoke is a business solutions engineer for a corporate network in Denver. He can be reached at ckyoke@yahoo.com.

Implementing IPv6 will require careful planning, a thorough review of the network's architecture and a detailed migration plan.

YANKEE INGENUITY

Howard Anderson

The true cost of spam

I am convinced that we need a new type of post office — an electronic post office. This is the case because spam is killing one of the most cost-effective productivity tools ever invented: e-mail.

At its essence, e-mail is a store-and-forward computer program. Someone deposits data in a file; someone else withdraws the same data from a file. In 1975, the U.S. postmaster general and the envelope manufacturers asked me to analyze how electronic mail would affect the post office. My answer: first-class mail would stay at about 100 billion pieces per year, but wouldn't grow. At the time, the amount of e-mail being sent in the U.S. was about 100 million messages per year — one-tenth of 1% of first-class mail. There weren't even PCs until 1981, but large companies were sending e-mail off their mainframes using a software program called PROFS. By 1997, e-mail had surpassed first-class mail. E-mail essentially doubled each year from 1975 to 1980 and has been growing 50% per year since then; first-class mail has been flat for the last 30 years.

In the early days, when a corporation would run e-mail off its mainframe, the cost was about $2 per message. As we learned to put e-mail on less-expensive servers, the cost went to about 5 cents per message. Now e-mail is considered free — but it's not.

If someone wants to send a piece of unsolicited mail via the postal service, they have to pay about $1 for printing, postage and handling. This out-of-pocket cost dissuades many people who are unsure about trying to sell you something from trying to do so. It's a form of self-regulation. But the cost of e-mailing to a person is zero. That is why IDC predicts that there will be 60 billion e-mail messages sent per day by 2006. That would be the equivalent of 10 e-mails per day from every man, woman and child in the world. If you assume that 80% of those messages are going to be from people in the U.S. (about 4.8% of the world's population), this means about 200 messages per day per person. Going away for 10 days? Good luck plowing through those 2,000 messages when you return.

What I propose is that all e-mail, internal or external, carries a 1 cent price tag — paid to the new U.S. Internet Post Office. So for example, a 50,000-person company in which each worker sends 10 messages per day, 240 business days per year, would pay $1.2 million per year.

Would corporations be willing to pay a penny per e-mail? In a heartbeat! Look what it's costing them now. If the average employee spends 10 minutes per day deleting junk, 240 business days per year, then this translates to 40 hours per year. Assume that time is worth $25 per hour, and you have a real cost of $1,000 per employee for a 50,000-person company — or $50 million per year.

Years ago, Charles Wang, former CEO of Computer Associates, turned off the corporate e-mail system from 10 a.m. to 3 p.m. every day because he believed that e-mail was getting in the way of management. He had the beginnings of the right idea. But now it's not the internal e-mail that is the problem — it's the external. In electrical terms, the signal/noise ratio has begun to turn adverse — too much noise, too little signal.

The same way we now have a "do not call" list for telemarketers, we need a method to force those who would bombard us with e-mail to stop. My answer is not government regulation, but cost. Right now Congress is passing a CAN-SPAM bill that would stem this absolute flood of unwanted e-mail. Terrific, but so what? All the spammers have to do is go offshore — and they will. Let's use the marketplace to regulate the market. Make sending spam costly and it will decrease by itself.

I would be more than willing to pay for sending e-mail if I could retain those 40 hours per year. How about you?

Anderson is senior managing director of YankeeTek Ventures, a Cambridge, Mass., venture capital fund for early-stage technology companies. He is also founder of The Yankee Group and the William Porter Distinguished Lecturer at the Massachusetts Institute of Technology. He can be reached at handerson@yankeetek.com.

What I propose is that all e-mail, internal or external, carries a 1 cent price tag — paid to the new U.S. Internet Post Office.

Special Report
From Network World Fusion

Are you still wired?

Once a luxury, wireless is rapidly becoming a business necessity, an enabler that keeps mobile employees productive and customer-facing employees connected and up to the minute. But, and there is a big BUT, as with any emerging technology there are lessons to learn, technologies to fine tune and advances all the while, meaning we have to relearn the lessons and fine tune the technology before forging full steam ahead.

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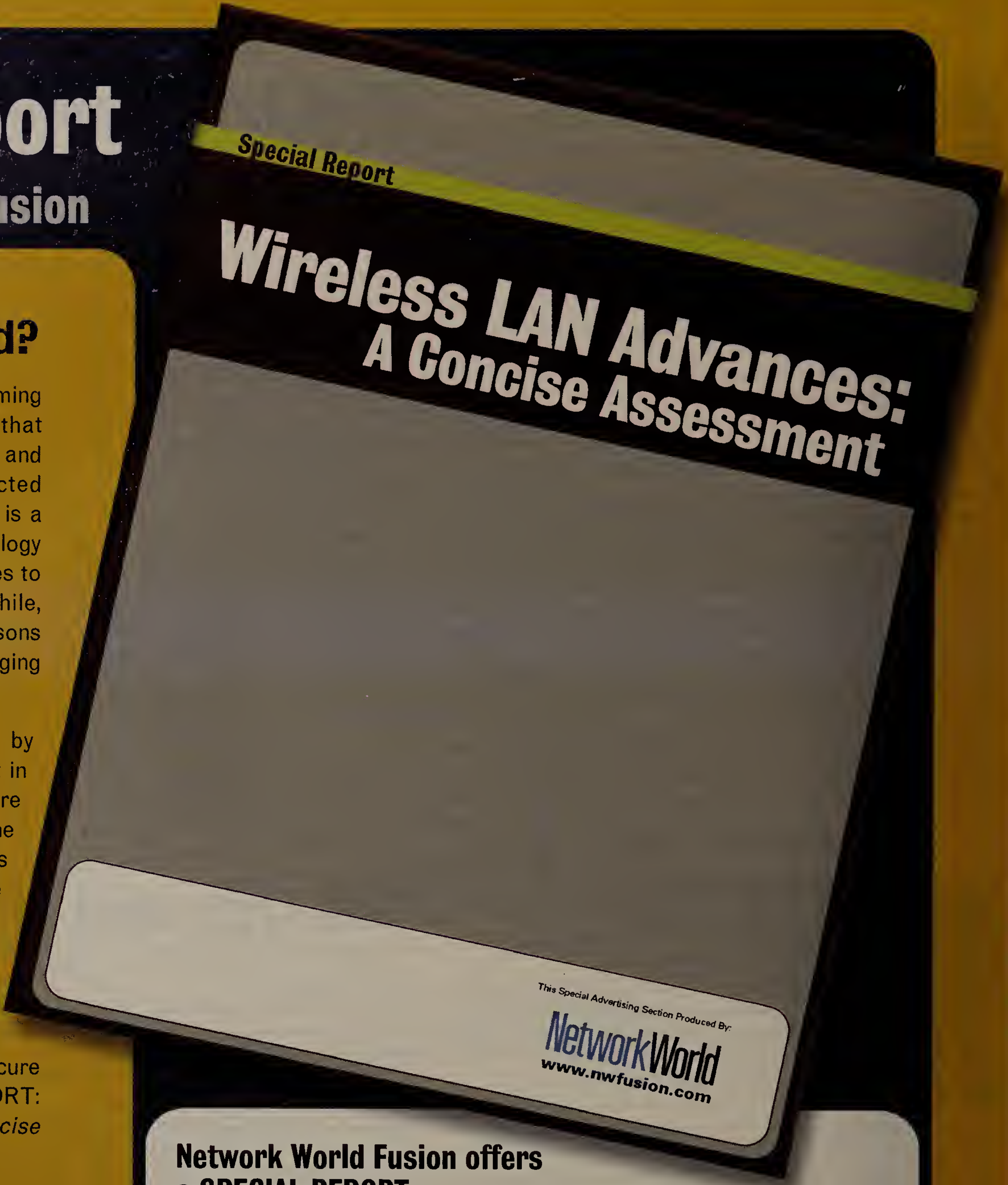

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The LWAPP flap

Proposed standard for WLAN interoperability runs into some static.

■ **BY JEFF VANCE**

A number of wireless LAN switch vendors are pushing a new standard called Lightweight Access Point Protocol that would create interoperability between thin access points and WLAN switches from different vendors, but some key players have failed to jump on the bandwagon.

Alan Cohen, vice president of marketing at Airespace, one of the companies most active in driving the standard forward, says LWAPP addresses one of the major roadblocks to WLAN adoption: the complexities surrounding security, management and deployment.

"Standardization drives adoption," Cohen says. "LWAPP is essentially USB for WLAN [access points] and network devices. USB allows you to plug a printer or a CD burner into a PC, and it connects at a very high speed. With USB in place, the issue of how to connect any new device is taken off the table. This encourages people to create. So when HP comes out with a new photo printer or Apple comes out with the iPod, they just work. The same is true with LWAPP. When you deploy a wireless switch, along with any type of LWAPP-enabled [access point], they will work."

But before LWAPP moves from a proposed protocol to a ratified Internet Engineering Task Force (IETF) standard, it will have to overcome some resistance from Aruba Wireless Networks and Cisco. "It's putting the cart before the horse," says Keerti Melkote, vice president of product management and marketing at Aruba. "Before a protocol is standardized, we must first understand the framework of wireless LANs. What functions belong in the [access point], which ones should reside in the switch? There first needs to be consensus on those points."

LWAPP is a communications protocol for networks that are migrating to "thin" access-point technology. Traditional WLAN products push all traffic handling, authentication, radio frequency management and mobility functions out to individual "fat" access points. The problem is that the access points act in isolation, making it difficult to perform critical functions such as seamless roaming, single sign-on and load balancing.

In small deployments, fat access points are fine. But to be enterprise-class, WLANs must support hundreds of users, and distributing control functions out to the access points forces network managers into a tough trade-off: Do they want robust WLANs supporting many users, or do they want a cost-effective solution? In the fat access point world, they can't have both.

Which is where LWAPP comes in. With the arrival of WLAN switching start-ups, there has been a trend toward centralized management, security and control based on thin access points connected to the wired network via a WLAN switch (or a gateway or router).

By centralizing intelligence within a WLAN switch, functions such as security, mobility and quality of service (QoS) can be managed across the entire wireless enterprise. However, as more vendors enter the WLAN switching game, the need has emerged for a standardized way for WLAN switches to communicate with access points. Without such a standard, one of the key benefits of thin access point networking — the ability to build multi-vendor WLANs — is lost.

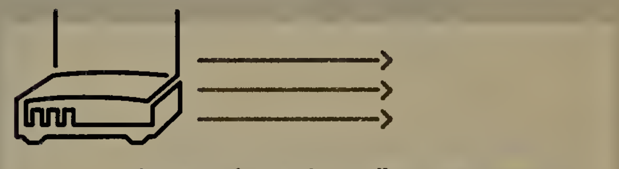
"For enterprises that want to take advantage of new wireless LAN switching architectures, they're left trying to use [SNMP] to communicate with their existing [access points]," says David Passmore, research director at Burton Group. "The problem with SNMP is that many of the features that WLAN switching offers cannot be utilized, such as [radio frequency] management." This leads to relying on one vendor for the switches and access points, and abandoning any access points already deployed in the corporation.

LWAPP centralizes functions that now reside on individual access points, enabling companies to secure and manage their WLAN deployments as a single network, rather than as individual cells. LWAPP would let vendors focus less on switch-to-access-point access protocol, enabling additional innovation in the higher-layer features, such as authentication, packet filtering and policy enforcement. Then any number of higher-layer functions — including encryption, QoS, rogue detection and load balancing — can be centralized for an entire

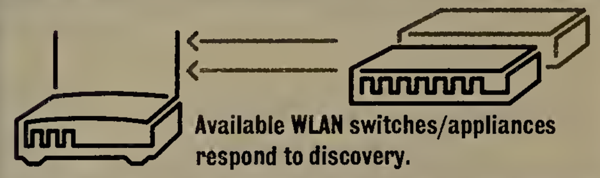
Lightweight Access Point Protocol

LWAPP assumes a network configuration that consists of multiple access points connected via Layer 2 (Ethernet) or Layer 3 (IP) to an access router. Today, access routers typically come in the form of WLAN appliances or WLAN switches. The access points are essentially remote RF interfaces that are controlled by the access routers. LWAPP governs how access points and access routers communicate with each other by defining the following activities:

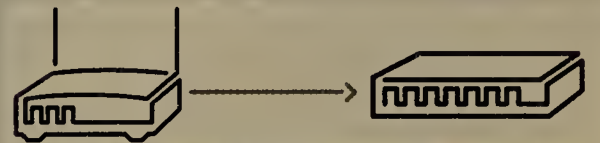
- Access point device discovery, information exchange and configuration.
- Access point certification and software control.
- Packet encapsulation, fragmentation and formatting.
- Communications control and management between access point and wireless system device.



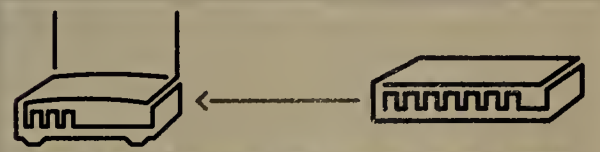
Access point sends out discovery requests.



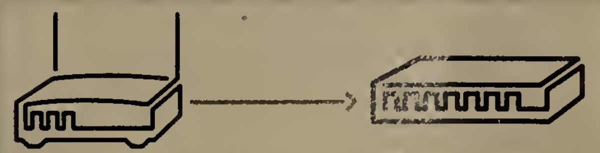
Available WLAN switches/appliances respond to discovery.



Access point associates with best switch/appliance, which determines type of frames supported.



Access point software upgraded by access router (if needed). Access point provisioned (SSID, security, channel, etc.)



LWAPP handles data encapsulation/fragmentation/transport between devices.

enterprise WLAN.

With LWAPP, a network manager can simply install a WLAN switch in a wiring closet, while relying on LWAPP for access point device discovery. It doesn't matter if the access points are from a different vendor than the switch, as long as the access points also are running LWAPP — the switch automatically will discover and integrate them into the network.

Originally drafted by Airespace and NTT DoCoMo, LWAPP is backed by vendors such as Chantry, Legra, Proxim and Symbol Technologies, with Avaya and Intel recently joining the LWAPP IETF working group. LWAPP is expected to move to a working group within the IETF in the first half of this year, with a final standard expected in 18 to 24 months.

Cisco originally supported LWAPP but then backed away. "We support some of the conceptual ideas that the LWAPP group has proposed, but it's just that it's too early for us to commit to any specific standard right now," says Ron Seide, product line manager in Cisco's wireless networking business. He agrees that there is a general trend toward multi-vendor interoperability. But he says Cisco is more concerned with interoperability from the access point to the client device, rather than from the access point back to the network. He also notes that Cisco is focusing on its own approach to WLAN management and security, its Structured Wireless-Aware Network solution, which was introduced in June.

Trapeze Networks, which originally opposed LWAPP, has since shifted course and decided to back LWAPP, which leaves Aruba as the principal opponent to the protocol. Aruba argues that LWAPP should be set aside in favor of the tunneling protocols already prevalent in networking. "We use a [General Routing Encapsulated] tunnel to communicate between our switches and access points," Melkote says. "GRE is an easy-to-use, 10-year-old standard. Alternatively, vendors could choose IP Security, which is also a proven standard. We favor GRE because it is more lightweight, and that is really one of our concerns with LWAPP. The signaling layer between LWAPP [access points] and switches is very heavy, especially for a so-called lightweight protocol."

Paul DeBeasi, vice president of product management and marketing at Legra Systems, disagrees. "GRE and IPSec are just tunneling protocols," he says. "Neither of them has anything to do with radio technology. Data tunneling is only a piece of what you need. What's really needed is not just taking 802.11 packets and forwarding them to the switch, but a protocol that allows the switch to control the [access points] as well."

"What ultimately will drive the acceptance of a protocol like LWAPP will be, first and foremost, the customers," Burton Group's Passmore says. "Customers want to have choice. They want to be able to pick and choose whatever controllers they want based on relevant features, while retaining the ability to pick and choose access points as well. They are also looking for asset protection or the ability to integrate their existing access points into any new WLAN scheme."

Vance is a technology writer and consultant. He was previously the editor of Mobile Internet Times *and* E-Infrastructure Times. *He can be reached at jwvance@zoominternet.net.*

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More online!

Read more about how LWAPP brings harmony to wireless LANs in our recent Tech Update.

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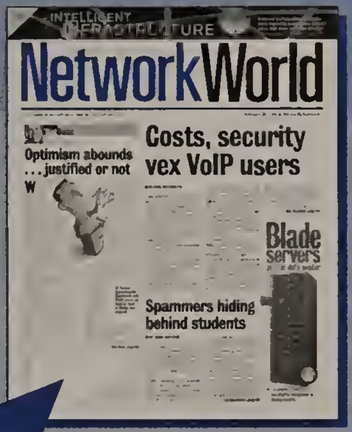
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SANity check

Survey says SAN usage growing, but performance problems and lack of management tools are a concern.

■ BY JIM METZLER

Along with any new technology come large doses of hyperbole and vague promises. With storage-area networks the promises included better ROI through storage consolidation and increased business productivity through collaboration. Now that SANs have been in place for a while, it's possible to step back and assess the scope of SAN deployment and gather some insight into how SANs are being designed to support business applications.

Ashton, Metzler & Associates recently surveyed more than 100 IT professionals from a variety of companies, including Global 2000 corporations, government agencies, regional utilities, midsize businesses and universities. One common finding emerged: SANs have begun living up to the hype.

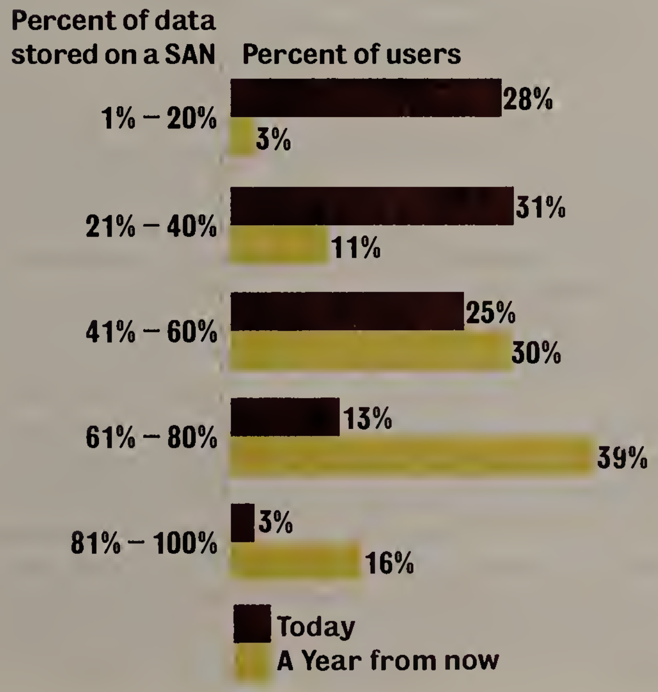
One of the key survey results is that SAN use is steadily increasing. The majority of companies surveyed have deployed at least one SAN, and roughly a quarter have deployed five or more. Also, while the first wave of SAN deployment was usually based on fabric switches, which had few ports and were not terribly robust, that situation is changing. Today, more than 40% of companies have a director-class switch, featuring 128 or more ports and a high-availability design.

Another key indicator of SAN acceptance is that companies that have already deployed SANs are planning to increase their usage significantly. Tom Harrold, systems architect at Information Resources, says that over the past few years his company has moved every device in its open systems environment that requires external storage onto a SAN. His company moved to a SAN environment to gain flexibility in assigning storage in response to rapidly changing business requirements.

Michael Boykins, director of technology infrastructure at Outback Steakhouse, adds that the only applications he runs on a SAN are database applications. However, he says over the next two or three years Outback will bring all its applications onto a SAN to enable the company to beef up its disaster-recovery capabilities.

SANs take larger role in enterprise storage

SAN users were asked what percentage of their storage requirements were provided by a SAN today and how that would change a year from now. The results indicate that many users are moving from a pilot stage to the point where the majority of their storage is on a SAN.



Application brownouts

While SANs are continuing their march toward mass-market adoption, they still have a significant growing pain to overcome: application brownouts. The phrase refers to having one or more applications occasionally perform notably slower than usual and then self-correcting. Some indications of application brownouts include the help desk receiving calls that an application is taking longer than usual to run a report, or an administrator noticing that a backup is taking longer than usual.

Roughly 70% of companies that have deployed a SAN reported having an application brownout at least once a month, and almost half of the companies that were surveyed indicated they did not have a good handle on what caused the brownouts.

Boykins says that although current technologies don't let him prove it, issues in the storage network often lead to application brownouts.

Harrold agrees, noting there are no tools that give him the visibility he needs to trend SAN performance.

The source of the problem could be anywhere, including the SAN, WAN, server, database or application server. One customer interviewed for our survey suspected that the SAN was at least occasionally the problem. The thinking was that with many server ports trying to gain access to fewer storage ports, the SAN has some built-in bottlenecks.

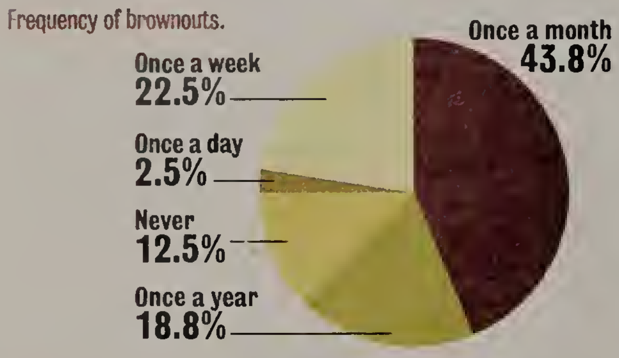
The typical response when application brownouts occur is to add bandwidth.

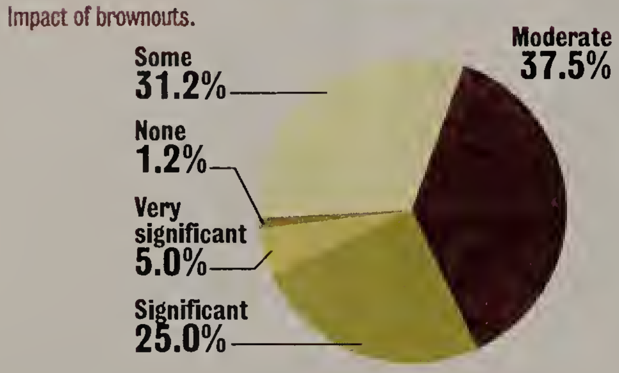
Application brownouts have a significant effect on business, primarily through lost productivity within a business unit. However, more than a quarter of the survey respondents indicated that application brownouts also result in lost revenue. More than 30% said the effect of an application brownout was significant or very significant, with more than half of the respondents indicating that if their company's ERP application experienced a brownout, the impact would be significant or very significant.

Harrold adds that if his company's ERP application experiences a brownout it can lead to delayed deliveries to customers. In addition to engendering ill will, these late deliveries also can result in financial penalties.

The brownout blues

Roughly 70% of companies surveyed experienced an application brownout at least once a month. (Also, almost half of companies surveyed said they did not have a good handle on what caused the brownouts.)





Buying criteria

In terms of buying criteria, the survey showed that the most important items were reliability, availability, serviceability and scalability. At the low end were storage vendor recommendations. Initial cost of a SAN scored somewhere in the middle of the pack.

Because cost is typically a relatively unimportant factor in the selection of an emerging technology, and a very important factor in the selection of a legacy technology, the study results indicate that storage networks have moved out of the innovator phase and into a more mainstream adoption phase.

Harrold says that based on his experience developing a SAN environment, interoperability is his most important decision criteria, followed by management issues such as being able to monitor the performance of inter-switch links (ISL) and switch ports.

One of the characteristics of a mature marketplace is that customers tend to have a preferred provider. That is not the case with SANs, where the current base of SAN users is not tethered to their existing storage network vendors. Furthermore, users are reducing their reliance on storage vendors to recommend their storage network infrastructures, indicating that they feel more knowledgeable about SANs. This indicates a more experienced and independent market.

Also, companies are beginning to run their business-critical applications over a SAN. More than three-quarters of the respondents indicated that their company's ERP and CRM applications are SAN-attached. The fact that companies are now running these applications over a SAN helps explain why reliability, availability and serviceability are the most important decision criteria.

Data center changes

One of the key drivers in the current wave of SAN deployment is the extent of change taking place in the data center. The majority of survey respondents indicated that their company had made at least moderate progress with consolidation projects such as data center consolidation, storage consolidation and server consolidation.

Changes in the data center are going to continue and will further fuel the deployment of SANs. The majority of companies that have already embarked on consolidation projects and expect to consolidate more in the next 12 months. Boykins and Harrold agree that the major change in their company's data centers has been server consolidation. According to Harrold, over the last three years his company has reduced the number of Unix servers by 30% and is now starting a similar activity focused on Windows-based servers.

SAN architectures also are changing. Stories on best practices in SAN design typically discuss the use of a "core-edge" design. While there is some indication that this design might become the industry norm, it is not yet widespread. Roughly 30% of the survey respondents indicated that they virtually always implement a core-edge design today, with almost 40% reporting that they will implement this architecture a year from now. The survey respondents also indicated that they do not tend to oversubscribe their ISLs, particularly in the case where a SAN is supporting a business-critical application such as ERP.

Harrold says that a couple of years ago his company had isolated SAN islands each built around a director-class switch. His company has since moved to a core-edge design, with director-class switches deployed at the edge and at the core.

Based on the findings of this study, SANs have clearly moved out of the early adopter phase. Storage networks are large and getting larger. They are supporting more key applications, and finding value in consolidated storage environments. Buyers are becoming more discriminating, implementing more sophisticated architectures and selecting storage network products based on their unique technology requirements.

Top (almost) 10 buying criteria

When respondents were asked to rank their criteria for choosing a storage network, reliability, availability and serviceability came out on top.

1. **Reliability, availability and serviceability.**
2. **Scalability.**
3. **Ease of management.**
4. **Performance guarantees.**
5. **Total cost of ownership.**
6. **Initial cost.**
7. **Internal expertise with the product.**
8. **Existing switch vendor.**
9. **Storage vendor recommendation.**

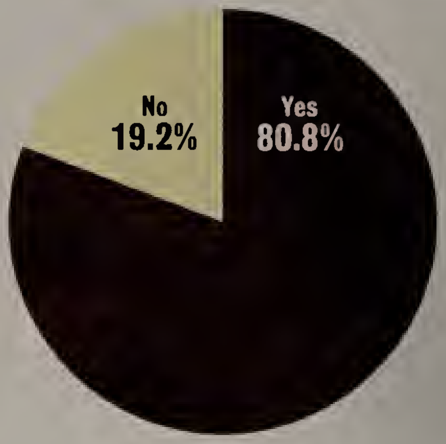
However, there also are some unresolved issues surrounding SAN deployment, including the widespread occurrence of costly application brownouts and the lack of effective management tools. As SANs continue toward mass-market adoption, users and vendors should take a moment to think about the needs for next-generation, ubiquitous storage networks.

Metzler is vice president of Ashton, Metzler and Associates. He can be reached at jim@ashtonmetzler.com. If you'd like to hear more from Jim Metzler, join him at Network World's Technology Tour "Network Management: The New Business Focus." Find out from the leading companies how to get your network's bandwidth, servers and other precious resources running at their optimal levels. Register now at www.nwfusion.com, DocFinder: 8938.

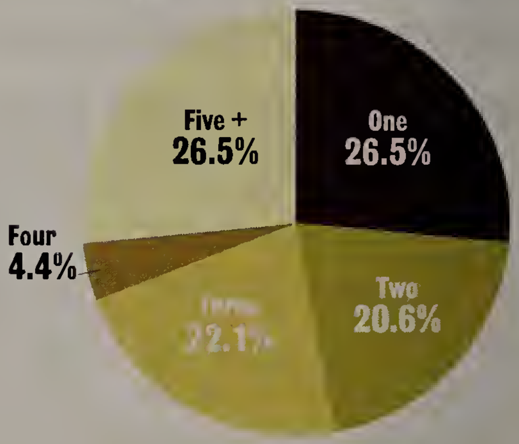
The SANs of time

As companies become more comfortable with SANs, they are deploying more SANs and larger SANs.

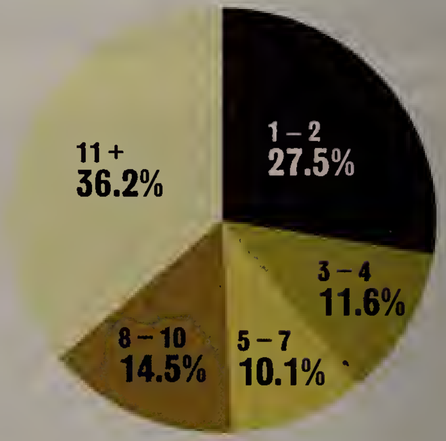
Do you currently have a SAN deployed?



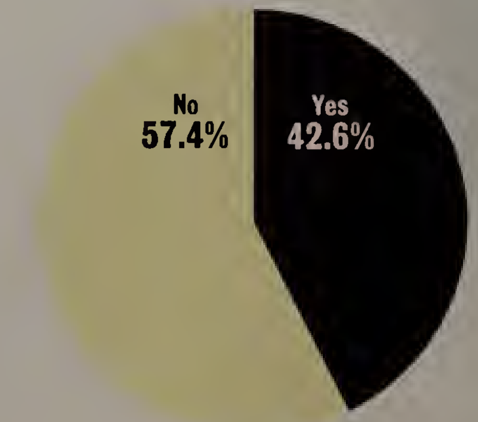
How many SANs do you have?



For all SANs, how many Fibre Channel switches do you currently have deployed?



Do you currently own a director-class switch?



NetworkWorld Review

NORTEL'S BAYSTACK 5510

New stackable switch offers decent bandwidth at a great price

BY JOHN BASS, NETWORK WORLD GLOBAL TEST ALLIANCE

Stackable switches — such as Nortel's new Baystack 5510 — are gaining a lot of momentum in enterprise networks because they let you buy a small, stand-alone switch now, then grow it to accommodate more bandwidth as you need it.

Nortel has entered the stackable switch fray with the BayStack 5510, which comes in 24- and 48-port 10/100/1000Base-T models. The price is very sweet at $7,000 for the 48-port variety.

In our performance tests, the BayStack 5510 achieved tolerable, but less than wire speed, throughput on a single switch and 87M bit/sec maximum stack bandwidth with good latency values.

Nortel offers good quality-of-service (QoS) features, but they are cumbersome to configure. While the company offers a broad set of administration tools and a decent set of user interfaces, there are some holes in the configuration tool set that could make it unruly in a large network.

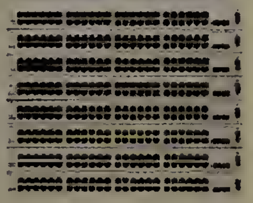
The BayStack 5510 doesn't support Layer 3 forwarding but does support Layer 2 switching, fast spanning tree, virtual LANs, VLAN tagging (802.1q), Ethernet priority (802.1p), QoS, port mirroring, cross-stack port trunking and Internet Group Management Protocol snooping.

Net Results

Nortel BayStack 5510-48T

OVERALL RATING **3.6**

Company: Nortel, (800) 466-7835, www.nortelnetworks.com **Cost:** $7,000.
Pros: Lots of stack bandwidth; great price.
Cons: No Layer 3 forwarding; configuration tools are lacking.



The breakdown

Performance	**40%**	**4**
Configuration & management	**30%**	**3**
Scalability & redundancy	**20%**	**4**
Installation & documentation	**10%**	**3**
TOTAL SCORE		**3.6**

■ **Scoring Key: 5:** Exceptional; **4:** Very good; **3:** Average; **2:** Below average; **1:** Consistently subpar

Management varies

Nortel provides several interfaces for managing and configuring a stack of 5510s — a text-based menu interface, a command-line interface (CLI) and a Web interface.

The menu-based interface — which is fairly intuitive and straightforward — is available through the console port on the front of the switch or through an Ethernet port using telnet over IP. This is the interface we used most often to configure the switches we tested.

The CLI is accessed through the menu interface and looks a lot like Cisco's CLI. Its commands are useful because they let you create scripts or command chains to implement complex configurations. The switches can then upload and apply these scripts in a text file format via Trivial File Transfer Protocol (TFTP). So you can create text configuration files from a text editor on a PC, then apply the configuration to the switch. Unfortunately, you can't save the current configuration as a text file and then edit that file, leaving no way to create a large text configuration file except by hand. This could be a huge hassle if you need to alter the configuration on multiple switches.

Using the CLI, menu or Web interface, the switch's or stack's configuration can be sent via TFTP off the switch to a server. Unfortunately, this file is in an unreadable binary format, so a user can't easily modify the configuration file outside the switch.

All commands are applied immediately on entry and are saved in non-volatile memory available when the switch or stack is rebooted. So while there is no need for a save configuration command, at the same time there is no easy way to list the current switch configuration. This could create some confusing situations when managing several switch stacks or trying to debug a configuration.

The Web interface is accessible through a Web browser via any Ethernet port on the stack. The interface is very responsive and useful, and offers the same functionality as the other management options.

Stacking operations

The switches are connected in a stack with two stack cables. The cables have high-density pin connectors on a quarter inch, braided wire. All switches in the stack connect to upstream and downstream neighboring switches, forming a ring. Each stack port has two 10G bit/sec channels in and two 10G bit/sec channels out. This all adds up to 80G bit/sec bandwidth at the stack interfaces.

Our performance testing comprised individual switch throughput, stack throughput and latency, QoS with both 802.1p and Differentiated Services, and multilink trunking (see How we did it, www.nwfusion.com, DocFinder: 9132).

We tested a full stack of eight switches using a complex mesh traffic configuration. The stack sustained 87G bit/sec, which is a far cry from 320G bit/sec Nortel advertises, but it's more than twice the bandwidth of the Cisco 3750 stackable switch reviewed earlier this year (DocFinder: 9126).

Nortel engineers agreed that the stack bandwidth for a full mesh traffic pattern is approximately 80G bit/sec. Our numbers were higher because some of the traffic in our test was confined to ports on the same switch and thus not limited by the stack bandwidth.

Latency through the stack was minimal (in the order of 6 to 20 microsec), which means the stack should support delay-sensitive traffic easily.

Throughput of a single switch was less than perfect but results were tolerable. With 64-byte frames, the switch could pass packets at wire speed, but the performance of the switch degrades as the frame size increases. These results are opposite of the results of most switches we have tested. Normally, performance degrades when frame size decreases because there are more frames to process per unit of time. Nortel engineers had no comment on these numbers.

The stack requires a base unit, which keeps up with the configuration of all the switches, unifies them into one configuration, replicates the console ports, and handles software upgrades for the stack. The base unit is set by a toggle switch on the back of the unit. The user interface button on the front can be used (with some cumbersome and non-intuitive Morse-code-like button pushing) to define the base unit. All this adds up to a lot of confusion.

The good news is once you properly define the base unit, the stack seems very stable in that it did not crash after we tried booting, rebooting, failing or trying to break it.

Stack management is fairly straightforward. Each switch in the stack is given a switch ID. The switch IDs are saved in the stack's memory based on media access control address. If the base unit changes, the stack doesn't suddenly renumber its interfaces.

The UI button — lit by a white LED on the front of each switch — lets you reboot an individual switch or the entire stack from the front panel of any of the switches in a stack.

In our tests, the stack rebooted in approximately 100 seconds. This is well within the norm for these types of devices. A single switch can reboot in about 70 seconds, which is good for this and comparable boxes.

Assessing QoS

Nortel advertises packet prioritization by 802.1p and Differentiated Services Code Point (DSCP). Each port on the BayStack switches, including the stack ports, features eight egress queues. The egress queues had the 802.1p values mapped to them. DSCP values can then be mapped to the 802.1p values. The default configuration that maps 802.1p values to a particular physical output queue should work fine for most enterprise networks.

Testing 802.1p with the default queue mappings showed that the queues and queue servicing algorithms operated as expected. The frame drop and latency management of all the flows destined for the various egress port queues was flawless.

Nortel lets you configure QoS to a high level of detail. However, with this configuration flexibility comes a confusing user interface and shortcomings in the documentation. More examples in the documentation would have been a great help.

One of the basic problems with QoS configuration is the sheer number of items needed to define and link together.

If there is a problem with one definition, there is no hint of a problem until the final step of applying a policy to an interface group. The confusion is compounded when the stack provides vague error messages when it can't apply a policy. We were quickly bogged down with little help from the documentation or the user interface. This left us rolling the dice with a virtually endless set of configuration combinations to apply in attempting to get a QoS configuration to work. We had to rely on Nortel engineers to get through the DSCP configuration so the stack would accept the policies.

Once we had the policies configured properly, it worked like a champ. We saw a distinct difference in packet loss and latency between the various service levels we defined in the switch.

Redundancy features

The stack can support up to six multilink trunking (MLT) links that span multiple switches. We configured the first port in each of four switches in a stack and connected them to another stack of four similarly configured switches. We added MLT links until we reached the maximum of six allowed on the stack. The feature worked as advertised. This configuration gives connectivity redundancy between stacks if a switch fails in a stack.

To help increase switch uptime if there should be a power supply failure, a redundant power supply (RPS) port is provided on the rear panel of each switch in a stack. This port allows the switch to be connected to an optional remote power supply. This configuration allows for continuous power if the built-in power supply fails. We didn't receive an RPS to test, but the option is worth noting.

The bottom line is that the BayStack 5510 offers a great price, provides a good amount of bandwidth between the switches in a stack, should support latency sensitive applications well, and has a highly flexible QoS feature set. But it does have several holes in its configuration capabilities that might prove to be a hassle in a large network.

Bass is a senior technical staff member at North Carolina State University's Centennial Networking Labs (CNL) in Raleigh, N.C. CNL tests networking equipment and network-attached devices for interoperability and performance. Bass is co-author of Building Cisco Multilayer Switched Networks, *and designs and leads the execution of the test suites. He can be reached at john_bass@ncsu.edu.*

Chintan Desai and Reza Manavi of CNL assisted with the testing. All large port number tests were conducted in Spirent Communications' Smartlab.

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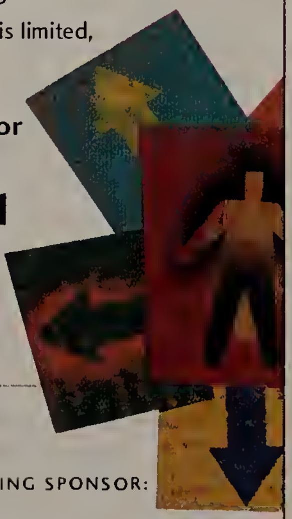

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How to quantify downtime

Calculating downtime's drag on productivity and profit can help make the case for network improvements.

BY TOM PISELLO AND BILL QUIRK

A conservative estimate from Gartner pegs the hourly cost of downtime for computer networks at $42,000, so a company that suffers from worse than average downtime of 175 hours a year can lose more than $7 million per year. But the cost of each outage affects each company differently, so it's important to know how to calculate the precise financial impact.

By achieving just the average amount of downtime of 87 hours per year, companies could save about $3.6 million annually. And for companies that rely entirely on technology, such as online brokerages, trading platforms and e-commerce sites, hourly downtime risks can be $1 million or more, making availability an even greater concern.

Quantifying the cost of downtime can help you gain funding for technologies that enhance performance and mitigate downtime risks. Yet most organizations have a difficult time calculating the losses associated with downtime because of its complexity.

Sometimes, downtime can cause a loss of productivity for a single user or a workgroup. Other times, the scope is more serious and affects a core application, business process or department, such as a call center or brokerage desk.

Duration is also a critical factor. A loss of a few minutes to an individual or group easily can be made up if employees stay late, but when downtime stretches to hours or days, the loss is more permanent. Whenever downtime impairs business transactions, the length of the outage carries serious consequences. Transactions might be queued automatically during short periods of unavailability, or perhaps clients will call back. But when the event lasts hours, transactions can be invalidated or clients permanently lost.

To quantify downtime there are two primary factors: productivity losses and business losses. Productivity losses affect individual or workgroup productivity, while business losses affect transactions or cause customer losses. Calculating both reveals wasted expenses and lost revenue.

For productivity losses, calculate the downtime based on the effect to users — usually using burdened salary figures. Burdened salary includes user compensation, estimated at $24 per user per hour in the U.S., plus the burden of taxes and benefits, typically 26% or higher than the base salary, according to U.S. Department of Labor. The downtime productivity loss calculation is typically represented as:

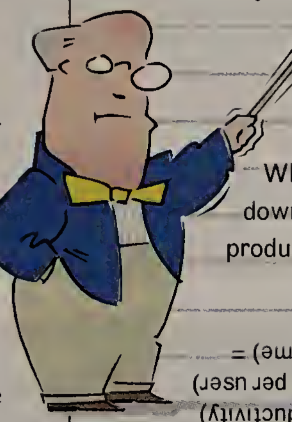
- Number of users affected multiplied by the percent effect on productivity multiplied by the average burdened salary per hour multiplied by the duration of downtime equals downtime impact.

For business applications or groups, the calculations become more difficult. There are two basic methods for the business impact calculation:

- Number of users affected multiplied by the percent effect on productivity multiplied by the average profit per employee hour multiplied by the duration of downtime equals downtime impact.
- Number of transactions per hour multiplied by the percent of affected transactions multiplied by the average profit per transaction multiplied by the duration of downtime equals downtime impact.

Do the math

Question: A network configuration change at a securities firm prevented 1,500 employees from logging on. It took eight hours to trace the problem and restore access. Users were idle during that time because their jobs required access to network resources. Assume the fully burdened labor rate for these workers is $52 and they each bring in hourly profit of $37.66. What was the cost of downtime in terms of lost productivity and profit?



Answer: 1,500 (number of affected users) x 1.0 (% impact on productivity) x $52 (burdened salary per hour) x 8 (duration of downtime) = $624,000 productivity cost loss

1,500 (number of affected users) x 1.0 (% impact on productivity) x $37.66 (average profit per user) x 8 (duration of downtime) = $451,920 business loss

Consider this real-world example that illustrates the effect of downtime. Accidental changes to Active Directory brought down Internet access for a large financial services firm's trading desk. As users logged on, they could not access vital information or mission-critical applications.

Some users who had not logged off the previous day were not immediately affected. However, as the policies refreshed, more users became subject to the errant Internet settings.

As a result, the service desk received increasing numbers of calls during the day as the propagation of the unintended change increased.

After eight hours, the problem was traced to an accidental change made by the Active Directory administrator, and the proper settings were restored. The trading desk was affected, and this incident cost the company millions of dollars in productivity and lost business.

To justify best practices, tools or infrastructure that help reduce the risk of snafus that affect availability use a probability equation similar to insurance risk analysis. To predict the effect, estimate the probability that one of the risks will be realized, and estimate how long the downtime will be. The downtime costs can be predicted as:

- Predicted downtime costs equal probability of event (percent) multiplied by the estimated duration in hours if the event occurs multiplied by the cost per downtime hour.

Once the predicted downtime costs for all the various types of scenarios are estimated, the cost of the people, process and technology improvement to reduce the downtime risk can be compared against the probability and cost of the risks to help justify the solution and assure that benefits can be derived from the assurance investment.

Pisello is president and CEO of Alinean, a consultancy that helps clients assess and articulate the business value of IT investments. Quirk is consumer relations director of enterprise management software vendor Full Armor. They can be reached at tpisello@alinean.com and bquirk@fullarmor.com.

System ups and downs

By decreasing downtime, IT departments could reduce productivity losses by millions of dollars.

Unplanned downtime (mission-critical)	Typical uptime	Hours down per year	Productivity cost*	Downtime risk
Worse than average	98%	174.72	$42,000	$7,338,240
Average	99%	87.36	$42,000	$3,669,120
Better than average	99.5%	43.68	$42,000	$1,834,560
Good	99.9%	8.736	$42,000	$366,912
Best in class	99.999%	.09	$42,000	$3,780

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*Per unplanned downtime hour for typical user group

Profit-draining potential

A mere minute of downtime can bring big losses.

Business application	Estimated outage cost-per-minute
Supply chain management	$11,000
E-commerce	$10,000
Customer service	$3,700
ATM/POS/EFT	$3,500
Financial management	$1,500
Human capital management	$1,000
Messaging	$1,000
Infrastructure	$700

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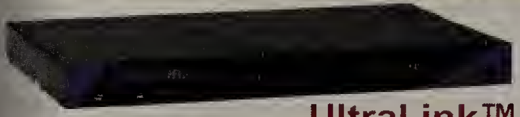

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- Up to 1600x1200 resolution

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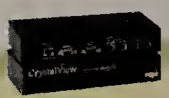
- optional serial/audio
- Single or dual (dual supports second KVM station)
- Up to 1280x1024 resolution



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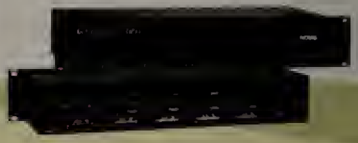

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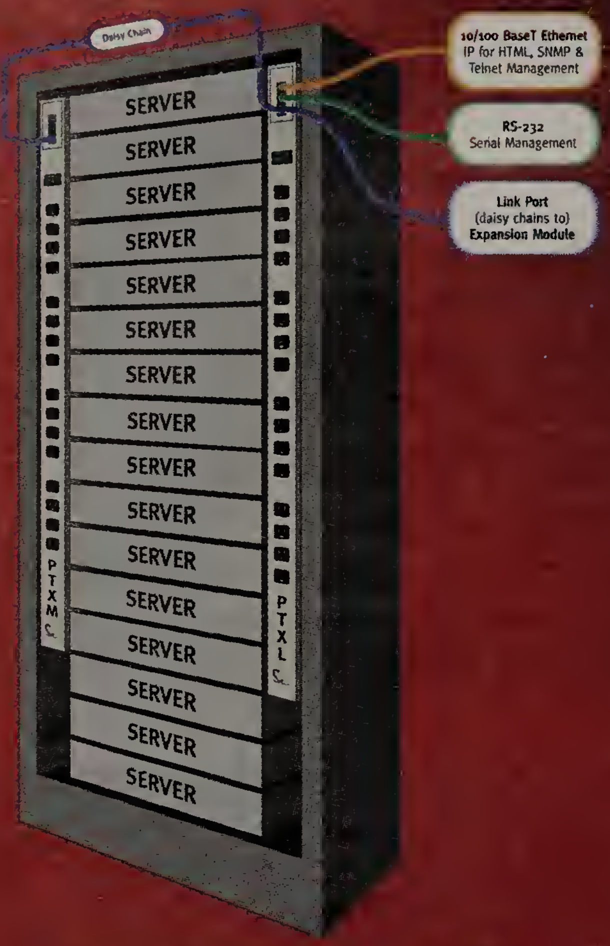
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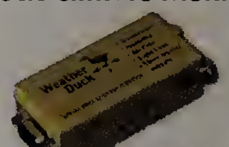

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Dice Technologies, Inc., a fast growing software Development Company is looking for the following personnel:

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Should have a bachelor's degree in computer science/ related field in any 2 or more skills with 2 years experience in the following: Java, J2EE, EDI, Rational Rose, EJB, XDI, WebLogic/WebSphere/Silver-Stream/Apache, XML, iPlanet, MQ Series, Oracle, SQL, DB2, Informatica, Cognos, Abinitio, Business Objects, SAP, EDI, Idocs, Gentran, PeopleSoft, Oracle Financials Documentum, Livelink, QA, 21CFR11, Win Runner, Load Runner, SQA, Lotus Notes, Domino, Java Script, Vb Sript, VBA, C, C++, VB, .NET, Unix, Shell scripting, Integration Methodologies.

We accept foreign education equivalent of the degree, or the degree equivalent in education and experience.

Senior Recruiters:

Should have min 3 Yrs Experience in IT Marketing .Send Resume to: Dice Technologies, Inc, Attn: HR, 906 Lacey Ave, Suite# 206, LISLE, IL - 60532

Computer Programmers (multiple) - New JerseyExamine & analyze client IT needs. Plan, design, develop & integrate various IT solutions according to client specifications, existing hardware & budget. Perform above duties using ORACLE, JAVA, HTML, C , C++, JavaScript, JDeveloper 2.0, e*Gate, SeeBeyond, &other EAI technologies. BS/MS & relevant experience req'd. Send resume to HR, SysZen Technologies, Inc. 646 Highway 18, Suite 218, East Brunswick, NJ 08816

Teksoft Inc is a growing software development and consulting firm in Houston. We are looking for Computer Professionals for the following positions:

Software Engineer: Research, analyze, design and develop internet programs for WEB based knowledge management, customer relationship management, sales force automation and e-commerce for development of SAP packages. Must have knowledge of any SAP (I.S) Industry Solutions modules. Requires Masters degree or equivalent in Computer Science or in a related field and 1 one year of experience in the advertised position or in a similar position and ability to use SAP Industry Solutions modules. Must be willing to travel.

Programmer Analyst: Plan, test and develop internet based programs for ERP packages, CRM, Sales force automation and E-Commerce. Requires a Bachelors degree or equivalent in Computer Science or in a related field and one year of experience in the advertised position or in a similar position and ability to use ERP and CRM. Must be willing to travel.

Accounts Analyst: Manage multiple accounts and develop SAP Finance Modules to track revenues and expenditures. Present quarterly reports and annual projections based on revenue received and expenditures. Requires a Bachelors degree or equivalent and one year of experience in the advertised position or in a related position with the ability to use SAP Finance modules and Quick Books. Must be willing to travel.

Send Resume and Cover letter to: Teksoft, Inc. 7457 Harwin Dr, # 303-B, Houston, TX 77036

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a) Certified Senior Business Analysts (ERP/CRM): Oracle Apps. 11.03/11i, PeopleSoft 8.0 & related tech.; (b) Apps DBAs: Oracle RDBMS 7.x/9i, Oracle Apps. & related tools upgrade & migration, ERWIN, SQL Server RDBMS/2000/7.0 and related tech. on Solaris & various other platforms; (c) Certified Oracle Apps. Programmer Analysts (ERP/CRM): Oracle Apps 11.03/11i (modules - GL, AP, AR, FA, PO, INV, OE/OM, WIP, BOM, Discrete & Process Mfg., HRMS, Service) - Customize Oracle Apps using Oracle Developer 6i/J Developer and related tech. for service modules; (d) Senior Programmer/ Analyst: Oracle PL/SQL, Oracle 9i, 9iAS & related tech.; (e) Siebel CRM/Oracle CRM Configuration Programmer/ Analysts: Siebel suite incl. & Oracle CRM 31/11i (Sales, Service & Transportation modules) & related tech.; (f) Senior DBAs: Sybase 12.5 & related tech., Oracle database 7.x/9i & related tech.; (g) Senior QA Engineers: Performance & Load testing in Oracle 11i and related tech. Experience testing on Oracle Processes such as Order to Cash, Procure to pay etc. Experience with Mercury tools & rel. tech.: (h) Dataware House Programmer/Analysts: Oracle Dataware Housing, ETL Tech. - Cognos 7.x & related tech. suite of Products Finance, Informatica 6.2, etc., Data Stage, Abinition & rel. tech. (i) Software Programmer/Analysts: M.S.Net, C#, C++, VB, J2EE, Java Strats, Documentum, MS Windows Administration & related tech. Prevailing wage. Consulting positions requiring travel. To apply, send resume identifying position(s) interested to HR, BPO Systems, 501 Silverside Road, Suite 83, Wilmington, DE 19809. EOE.

Programmer Analyst
Opening 4

Software design and development in Java , J2EE, CORBA, OOP in UNIX Environment, UML, RUP, Rational Rose , Clear case, Clear quest. Orbix2000, web logic 6.X , Oracle8i, Dream Weaver, Vignatte. Minimum Qualification: Bachelors in computer science or related fields is required with 2-3 yrs exp. Or Master's in computer science or related fields with 1-2 yrs exp

Programmer Analyst
Opening 4

Software design and development in C/C++, CORBA, OOP in UNIX Environment, UML, RUP, Rational Rose , Clear case, Clear quest, Orbix2000, web logic 6.X, Oracle8i, Dream Weaver, Vignatte. Minimum Qualification: Bachelors in computer science or related fields is required with 2-3 yrs exp. Or Master's in computer science or related fields with 1-2 yrs exp

Business Analyst:
Openings 3

Performing diverse analytical tasks, support for continuous review and improvement of IT services delivery, web management, Business Development Minimum Qualification: Bachelors in Business Management or related fields is required with 2-3 yrs exp.

Send Resumes
to Head Quarters
Semafor Technologies LLC
#212
3300 Holcomb Bridge Road
Norcross, GA 30092.

Programmer Analyst. Sought by Englewood Colorado consulting company to work in various unanticipated locations throughout the U.S. Convert project specifications and statements of problems and procedures into detailed logical flow charts for coding into computer language. Develop and write computer programs to store, locate and retrieve specific documents, data, and information. Program, test and implement web-based/client-server applications. Use of SQL, SQL Server, HTML, Visual Basic, Java, OOP, ASP and Windows NT. Reqs. Bachelor or equivalent in Computer Science, Computer Engineering, Electrical Engineering, Electronics & Communication Engineer or related field. Plus 1 year in the job offered or 1 year in a related occupation, including Systems Engineer, Systems Analyst, Programmer, Software Engineer. $56,000/year, 40/hrs/wk, 8:30AM-5: 30PM. Respond by resume to WORKFORCE DEVELOPMENT PROGRAMS, PO Box 46547, Denver, CO 80202, and refer to Job Order No. CO5063926

ENGINEERING

Powell Power Electronics Company, Inc., seeks: Development Engineer to develop next generation electronic power distribution equipment. MS in Electrical/Electronics Engrng + 1 yr exp. in power electronics or Ph.D. in Electrical/Electronics Engrng. Knowledge of power semiconductor devices and analog & digital circuits req'd. Background in thermal calculations for power devices, prototyping & testing electronic circuits, and simulation skills also required.

Job location: Watsonville, CA Send resume w/ad to Powell Power, attn HR, 5669 Gibraltar Dr. Pleasanton, CA 94588.

Applications Programmer Analyst Senior, Rockville, MD, WyStar Global Retirement Solutions. Define, design, code, test, and implement quality systems & solutions. Reqs. BA/BS in MIS, Computer Science or Mathematics and 2 yrs exp. in position offered or as a Programmer Analyst or Software Engineer. The 2 yrs reqd exp. must have incl. work with Daily 401(k) Record Keeping and Daily Trading appl. systems, Windows NT and Digital UNIX operating systems, Sybase, MS Access, C, C++, Java, Java Script, HTML, Visual Basic, VB Script, SQL, SQR, PVCS, CAST, and Unix Shell scripting. 40hrs/wk, Send resume & cvr. ltr. to John A. Craft, WyStar Global Retirement Solutions, 9210 Corporate Blvd., Suite 300, Rockville, MD 20850. No Phone Calls Please.

JUNIOR SYSTEMS ADMINISTRATOR-Financial management firm seeks Junior Systems Administrator for its 250 nodes Linux cluster for trading programs. Duties include cluster administration (building Linux kernels, building packages, logfile analysis, writing automation scripts, monitoring nodes, performance tweaking & troubleshooting) & management of in-house support infrastructure, including daily administration of users 50PCs and 250 Sun machines, utilizing UNIX. Backup administration using Legato Networker with 600+ tapes. Bachelor's degree in Computer Science or Engineering (any field) and at least 6 month experience required. Salary according to experience. Mail resume to RTC, 600 Route 25A, East Setauket, NY 11733, Attn: JR.

Software Engineers to analyze, design business appls for SAP R/3 using ABAP, BAPI, Workflow, ALE, etc. under Windows and UNIX OS; analyze business processes to determine reqs and generate reports; prepare documentation, flow charts and programming specifications; create application prototypes for client approval and rapid application development; train users in business application usage. Require: MS or foreign equiv. in CS/Engg.(any branch)/Math and 1 yr exp in IT. High salary. F/T position. Travel Required. Resume to HR, Smartsoft International, Inc., 4898, South Old Peachtree Rd, Norcross, GA 30071.

Programmer Analysts to analyze, design web appls using Java, VB, Java Script, VBScript, HTML, DHTML, ASP, PHP, Access, Oracle, SQL Server, Dreamweaver, Active X, IIS under Windows, UNIX OS; generate batch reports; conduct user req/feasibility studies & systems analysis; maintain, document, support, test and debug appls. Require: B.S. or foreign equiv in CS/Engg(any branch) with 2 yrs exp in s/w industry. High Salary. F/T. Travel involved. Resume to: HR, Salem Associates, Inc., 405, 6th Ave., Ste 102, Des Moines, IA 50309

COMPUTER

Artnet South LLC (Irvine, CA) Senior customer Service Rep. (Orbotech Equip) V206, V206E, V309, Blazer Photo Plotter 5008, VRS3 & VRS4 Xpert 1700 CAM STATIONS. Rec. calls from cust. having prob & apply knowledge to troubleshoot & solve problems. Email resume to: camirvine@artnetpro.com

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Graphic Designer: Handle graphic design projects on the web including concept development and information organizing using "visual design" skills with both print and interactive applications. Communicate efficiently with overseas subcontractors. Design and illustrate art and copy layouts for material to be presented in visual communications media, such as company brochure, magazines and newspapers. Req. BS or equivalent in Graphic Design or Fine Arts with 9 months exp. in job offered or as Web Designer. Must be proficient in Windows and OS platforms, Quark/Indesign, Illustrator, Photoshop, AfterEffect, TwinBridge and HTML Coding. 40 hr/wk, 9-5. Contact American Global Development Group at 900 Circle 75 Parkway, Suite 1680, Atlanta, GA 30339.

Logistics Engineers (Job #42) to design, develop and support logistical optimization algorithms and software solutions using VB, C, C++, Oracle, SQL Server, MSAccess, etc. under Windows & Linux Os; identify, create, implement solutions for cost reduction & process improvements of logistics services; interact with internal/external users to gather project/data reqs; design, develop optimization appls to support end-users; customize existing logistic solutions. Require: B.S. in Comp Engg./ Industrial Engg./Logistics and 2 yrs exp in job offered. MS in any of the above will be accepted in lieu of BS and 2 yrs exp. F/T. Resumes to: Priscilla Vickers, Transplace, 509 Enterprise Drive, Lowell, AR 72745. Please specify job # on cover letter.

System S/Ware Tester needed at client sites to perform end-to-end systm s/ware appl testing incl s/ware release scheduling, manage, test, install/deploy, support production to end user groups, distribute work assignments, set up systm test envrmt & sanity check, & install & configure testing tools such as WinRunner, Test Director, Astra, Caliber RM. Addl tools used incl Java, Sybase, Sun Solaris OS, Shell scripting to dvlp web based testing tools, report & automate testing. Send resume to: Global Consultants, Attn: Hireme, 25 Airport Rd, Morristown, NJ 07960.

Programmer Analyst - various locations throughout U.S. - Responsibilities include analysis of software requirements, design, development, implementation & maintenance of software systems. Work to meet deadlines & software to clients. Position is 40 hrs/wk from 8:00 - 5:00 paying $92,000/yr. Must have Bachelor's in elec eng or comp sci. Will accept foreign equiv or combo of academic & prof exp that is functional equiv of U.S. Bachelor's degree. Must have 2 yrs exp w/job offered or 2 yrs exp as comp professional. Must have exp w/analysis, design, development & testing of software applications. 2 yrs w/Oracle 8.0/8.1.7, PL/SQL,

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ENGINEERING

BEI Systron Donner Automotive Division seeks: MEMS Development Manager to direct & coordinate activities to develop MEMS devices & sensors Requires Ph.D. in Physics + exp. Job location: Hayward, CA Send resume w/ad to Paul Quezada, HR Mgr, BEI Systron Donner Automotive Division, 2700 Systron Dr., Concord, CA 94518

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Systems Software Engineer sought by leading provider of embedded imaging systems in El Segundo, CA. Must have Bach. Degree in Computer Science/Electrical Engineering or its foreign equivalent with 2 years experience in writing printer drivers for Windows platforms and systems software exp using C. Mail Resume to Recruiting, Peerless Systems Corporation, 2381 Rosecrans Ave., El Segundo, CA 90245.

Statistical Programmer Analyst. Provides programming leadership & support to the project team. Works on multiple protocols & drug compounds including pooling data for interim analyses, Integrated Safety Summaries, & Integrated Summary of Efficacy. Resp. include adhoc listings using SAS on UNIX & Windows environment, etc. Req M.S. Comp. Sci & 1 yr exp in job/1 yr exp as a Progr. Analyst. Send ad & resume: Kyle Foster, Amgen Inc., One Amgen Center Dr., Thousand Oaks, CA 91320-1799 (jobsite). Include Ad# 03-289FV.

Systems Administrator for wholesale estb in Norwalk, CT. Req'd to encode, test & install systems for accounting, inventory, sales/invoicing & whlsle prod analysis prgms; Monitor & update ntwrk./sys./prgms. Must have Bach Deg in Comp Sci or rel IT field (or equiv) & 2 yrs exp in job off'd or 2 yrs exp in mgmt/spec. position in Comp. Systems. Must have working knowl & ability to work in Unix, Cobol, C/C++, HTML & Java. Send resumes to: General Mgr., Unique Beauty Supplies, Inc., 24 Belden Ave., Norwalk, CT 06850.

Telecommunication Systems Analyst (F/T Richardson, TX) Ref: TSA1. Analyze telecommunication systems (GSM, GSM1x, CDMA, UMTS) specification requirements in 2.5G, 3G and NGN domain and research relevant wireless and softswitch standards. Analyze and evaluate wireless system performance, features, capacity call models, core network design and system architecture. Conduct customer lab trails for networkwide interoperability. BS in electrical/electronics/computer engineering and 2 years related experience. Send Resume to MP, Spatial Wireless, 1651 North Glenville, Suite 210, Richardson, TX 75081.

Archstone-Smith Communities seeks applicants for the position of LRO Systems Administrator in Englewood, CO to configure, test and administer LRO (Lease, Rental Options) computer management system and servers. Requirements include bachelor's degree in computer science or engineering and 3 yrs exp administering LRO systems which run on Solaris operating system and incorporate Oracle RDBMS. Respond in writing with resume and reference JON 3778A to Cory Wood, Archstone-Smith Communities, 9200 Panorama Circle, #400, Englewood, CO 80112. No phone calls or emails.

Systems/Programs Analyst sought by MIG International Group, Inc. to work in Boulder, CO. Under close supervision, engage in moderately complex tasks involving the analysis of data communications systems (both hardware and software), to identify available e-commerce technologies. Requires a Bachelor's in computer science or related field, including mechanical engineering; one year experience in development of interfaces, procedures, scripts, and other utilities to implement an e-commerce database system utilizing web-based software development tools including Microsoft InterDev, JBuilder, Dream Weaver, and Front Page; software internationalization and localization specifically in Chinese (including Chinese fonts and character sets); and configuration management tools. Respond via resume to Jim Van Nelson, MIG International Group, Inc., 2450 Central Ave. P3-P4, Boulder, CO 80301 and refer to 4755CL.

DBA for IT co in Trevose, PA. Desgn, admin & maintn Informix & Oracle d/bases on Unix platfrms. D/base upgrdes, Migrte, Backup, Recovery, & Perfrm Tune Informix & Oracle d/bases. Set up Enterprse Replication w/Informix d/bases. Utilize progrmng Informix EsqlC, Informix 4GL, VB, PERL, SHELL scripting.Req Bach deg or equiv in Comp Sci, Engg or equiv & 3 yrs exp in the job offered. Send resumes to HR, Zen &Art of Client Server Computing, Three Neshaminy Interplex, #301, US Rt 1 & Old Lincoln Hwy, Trevose, PA 19053, Fax: 215-245-4705, e-mail: resumes@zenart.com

PROGRAMMER ANALYST Design, dvlpt, analysis, testing and integration of complex web-based applications w/ MFG/PRO & Progress. B.A. Eng. or Computer Sci. or equiv + 2 yr in job or software dvlpt. exp. reqd. WebSpeed, Java, MFG/PRO ERP w/in Progress Version 6, UNIX & LINUX exp reqd. Comp. salary. Apply to: BravePoint, 5875 Peachtree Industrial Blvd #200, Norcross, GA 30092.

Computer software engineer responsible for development/support of medical imaging applications and clinical software. B.Sc. in comp. eng. Or comp. science and 5 yrs. exp. reqd. Call Sunil Sharma @ Sunbelt Medical Corporation. 713/956-9500.

Senior Software Engineer needed. Must have Masters Degree in Computer Science or Engineering and 2 yrs experience as Software Engineer including 2 years of C/C++, Assembly and VxWorks. Send resumes to Roy Masters, Epilog Laser, 500 Corporate Circle, Ste. L, Golden, CO 80401.

Bioinformatics/Senior Software Engineer wanted to work closely with human genetics researchers, tech. database mgrs., programmers & bio. labs to assist in designing software solutions to cutting edge problems in the creation & interpretation of genomics databases; work as part of a team of Bioinformaticists, Database Admins., & Genetic Epidemiologists in developing & maintaining a large Laboratory Information Management System; design & support new apps. for an Oracle database encompassing genomic (incl. sequence data), clinical & epidemiological data; work closely with support staff to assist in disseminating data via web interfaces & to develop new bioninformatics software tools & methodologies; participate in the design, architecture, & engineering of next-generation Analysis Pipelines; & participate in the epidemiological, clinical & genetics research, such as data collection, biological information analysis & study mgmt. Must have Master's Deg. in Comp. Sci. & 2 yrs. software develop. exper., incl. exper. developing a Laboratory Information Management System, knowledge of scientific research process in bio. sciences, particularly the application of computer technology to optimize/support those processes, & proficiency in Oracle database design & development. Salary: $90,462/yr. Send 2 resumes to Case#200203383, Labor Exchange Office, 19 Staniford St., 1st Fl., Boston, MA 02114.

DATAFORMIX Technologies, Inc has openings nationwide for computer proff'ls w/ two yrs of exp in the following skills: VB, VB.NET, Delphi, Java, JavaScript, J2EE, JVMPI, JNI, JDI, EJB, SOAP, JBuilder, Visual Age for Java, PB, C++, VC++, COM/DCOM, SQL Server, HTML/DHTML, Active X, Site Server, Index Server, MTS, IIS, ASP, ASP.NET, Infopath, JSP, Web Logic, WebSphere, Visual Source Safe, CORBA (Visibroker), CodeWright, Kawa, EDI, CGI, Perl, CSS, XML, XSL, DSDM, TCP/IP, CML, COBOL-II, VS-COBOL, IMS, DB2, CICS, JCL, VSAM, TSO/ISPF, DB2 Stored Procedures, MQSeries, File Aid, QMF, SCLM, Changeman, Sibas, Sintran, RogueWave, AUTO DESK, AUTO CAD, Oracle, PL/SQL, Oracle Forms, Oracle Reports, Oracle Express, Discoverer, Oracle Appl"s, Manufacturing, Fin"ls & Supply Chain Mgmt, Oracle 11i CRM Applications, OLAP, Actuate Reporting, Bus. Objects, SAP, ABAP/4, ISPF/Spool, AIX, Cognos Impromptu, SOAP, UML, Novell Netware, Win NT/2000/XP/2003, Unix & Shell Scripting/Programming, Linux, BSDi, ClearCase, Perforce, WebDB, Panvalet, BPWin. Positions req Bachs Deg or Mast Deg. Equivalent deg & exp is accepted. Candidate should be willing to travel & relocate. Exc. Pay & Benefits. Sal commensurate w/ exp. and position sought. Email res: hr@dataformix.com

Programmer Systems Analyst. Coordinates, programs & designs techniques to develop &report solution using Cognos Suite of applications. Resp. for project status to higher mgmt. Req Bach. in Comp. Sci.or Math or Computer-Related Discipline & 2 yrs exp in the job or 2 yrs exp as a Sr. Programmer/Systems Analyst. Send ad & resume: Kyle Foster, Amgen Inc., One Amgen Center Dr., Thousand Oaks, CA 91320-1799 (jobsite). Include Ad# 03-236FV.

Senior Computer Systems Analyst - RELIANCE STANDARD LIFE INSURANCE COMPANY (RSL), a leading national employee benefits insurer and subsidiary of the Delphi Financial Group, Inc. (a highly successful NYSE-listed integrated employee benefits services company with $3.5 billion in assets), has an outstanding opportunity in its Information Services group for a Senior Computer Systems Analyst. This position will analyze, develop, and test programs to support all-encompassing insurance applications using object-oriented design. Develop group claims and policy administration system using Progress 9.1c 4GL, Smart Objects and ADM2. Analyze business/user requirements and implement system changes. Implement and install new software releases. Monitor back-end Oracle database and support applications to optimize system performance. Develop MIS reports using "Actuate" Reports Toolset. Brief travel to Canada required several times a year. Position requirements include Bachelor's in Information Sciences and at least five (5) years of application development experience, with at least two (2) years utilizing FrontTier application framework. Incumbent must be knowledgeable in Progress 4GL, Progress ADM2 and Smart Objects (version 9.1c or higher), including object oriented programming concepts utilizing Progress/Oracle Database administration skills. Knowledge of XML and Actuate is a plus. Insurance industry or relevant consulting experience highly preferred. RSL offers a highly competitive compensation and benefits package (including business casual dress, 100% tuition reimbursement for approved courses, and immediate eligibility for 401(k) savings plan participation). Please mail/fax resume and salary requirements to: Belinda Jordan, PHR, H.R. Generalist, RELIANCE STANDARD LIFE INSURANCE Co., 2001 Market Street, Suite 1500, Philadelphia, PA 19103. FAX: (267) 256-3543. belinda.jordan@rsli.com All applicants will receive consideration for employment without regard to race, color, religious creed, disability, national origin, veteran's status, gender, or sexual orientation.

Software Engineer. Sought by Englewood Colorado consulting company to work in various unanticipated locations throughout the U.S. Duties: Research, design and develop computer software systems in conjunction with hardware product development. Analyze software requirements to determine feasibility of design within time and cost restraints. Consult with clients to define needs or problems. Use of C, C++, Java, JavaScript, HTML, XML, Oracle, SQL Server, Tcl/TK, UNIX, COM, VAX 3400, SUN Sparc and eMatrix. Reqs. Masters or equivalent in Computer Science, Computer Engineering, Electrical Engineer or related field. Plus 3 years in the job offered or 3 years in a related occupation, including Programmer Analyst, Consulting Analyst or Implementation Consultant. Will accept a Bachelors degree plus five years of progressive experience in the field or related occupation in lieu of required education and experience. $75,000/year, 40/hrs/wk, 9AM-6PM. Respond by resume to WORKFORCE DEVELOPMENT PROGRAMS, PO Box 46547, Denver, CO 80202, and refer to Job Order No. CO5060967

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Enku Gubaie, Senior Account Manager
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Vintage

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Damer, head curator at the DigiBarn computer museum near Santa Cruz, Calif., and CEO and founder of The Digital Space Commons, an Internet content development company.

While Digital Space keeps Damer busy handling projects — including helping NASA create 3D visualizations of future missions to Mars — his true love lies in the DigiBarn, which houses hundreds of computer systems and related artifacts.

"We specialize in having working systems and capturing the stories of the folks who created them," Damer says.

The museum houses everything from a 1975 MITS Altair 8800 — considered by many to be the first microcomputer, it featured a 2-MHz Intel 8080 chip with 256 bytes of standard RAM and sold for $495 — to an original sketch of the Ethernet concept drawn by Bob Metcalfe.

"For network gear, the most interesting pieces we have are the original Ethernet taps and transceivers pulled from the ceiling at Xerox PARC [in Palo Alto, Calif.]," he says.

Damer says of particular interest is Dave Boggs' Ethernet drop, which is a "fat" 1M byte Ethernet implementation that fed packets right to Boggs, co-inventor of Ethernet along with Metcalfe.

Show and tell

If there's anything Damer likes better than his work with DigiBarn, it's talking about it. He did just that last fall at the Vintage Computer Fair (VCF), a gathering of like-minded folks in Mountain View, Calif.

The 6th annual fair featured sessions led by renowned technology developers such as William and Lynne Jolitz, co-inventors of 386BSD — the first open source Berkeley Software Distribution Unix system for the x86 platform. It also featured hundreds of working and non-working displays, including prized PCs such as the Apple I, introduced in 1976, and the Wang 2002, which debuted four years earlier.

The fair has its roots on the East Coast — the first being held at an old RCA building (which subsequently became a Digital Equipment facility) in Marlboro, Mass.

"We had the largest lineup of speakers in VCF history [nearly 20] plus a huge number of exhibitors [more than 30] and a lot of cool special events happening, like the Xerox Alto 30th Birthday Bash," says Sellam Ismail, curator of the VCF's archives.

Ismail says interest in the VCF, which attracted a record crowd of 500 attendees, is growing. A show is slated for the Boston area this year, and events for Japan and Australia are in the works. VCF already has had a show in Munich for the past four years.

Like Damer, Ismail has looked through his share of clammy basements to find computer gold. One of Ismail's prized claims includes a box known as the world's first router, once located in a major bank in Concord, Calif.

"It was a DEC PDP 11/70 [introduced in 1975] that was used to route data between bank branches literally all over the world. It had a massive modem bank and was put together in the early 1970s. There was a complete back-up system in San Francisco," he says.

Ismail says the bank's system administrator didn't want the hardware to just go to a scrapper. So he contacted Ismail, who worked with the Computer History Museum in Mountain View to collect the complete system, which now resides in the museum.

Ismail has some other significant historical items, such as an Apple Lisa, which pre-dates the Macintosh and was Apple's first attempt at a GUI-based computer, as well as a DEC PDP-8, the computer that beget the "mini-computer" class of machines. "I have Windows 1.0 in its original retail package, complete with disks and manuals," he says.

The money issue

For now at least, it seems these computer collectors are in it to preserve history, rather than make money off their items like collectors in so many other areas.

"Value is always a tricky issue. When I do appraisals, I always base the value on what I would expect the item being appraised to fetch under ideal conditions in an auction environment. I also take into account scarcity, historic significance, and the typical criteria such as condition, completeness and functionality," Ismail says. "That being said, some old computers fetch quite a bit of money. The Altair 8800, a computer that appeared as a kit in the January 1975 issue of Popular Electronics and originally sold for under $500 in 1975, regularly sells for $1,500 or more in online auctions."

Ismail built his current business, VintageTech, around his collection. With its vast assortment of old computing gear, VintageTech can read data off of virtually any disk or tape system ever made. "I can convert punch cards, paper tape, reel-to-reel magnetic tape, removable disk packs, to CD-ROM so that data can be used on modern systems," he says.

Meanwhile Damer says eBay is a poor measure of the value of these vintage components, as the site often caters to "impulse" buys.

"If someone just has to have a piece and is willing to restore it and get old software running, then that item has a high amount of value to them personally. We are featuring a Cray 1A supercomputer at the DigiBarn. Its value in 1980 was $10 [million] to 15 million, but what is its value today? Perhaps in the future there will be a wave of serious collecting and a real market for some of these artifacts, as you have seen for automobiles."

Money aside, historical significance and the people behind the technology is what collectors insist really drives them.

"Old computers are so much more fun to play with than modern machines in certain ways," Ismail says. "They're a lot simpler, easier to understand, more fun and easier to program, a lot less susceptible to crashes, and they can't be infected by the latest copycat Internet worm."

Ismail adds that the intent is for all collections to help future generations understand how the computer-immersed society they will most likely inhabit came to be. "I hope they appreciate all the heavy lifting and pulled-muscles I had to sustain to do my part to preserve a piece of that history," he says. ■

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Got great ideas?

■ Got an idea for a Wider Net story? An offbeat technology industry-related topic? A fascinating personality we should profile? Let me know at bbrown@nww.com.

SSH

continued from page 14

cial SSH software package to end the compatibility problems.

"The biggest argument against freeware is that it costs us in staff time to manage it," Monteith says. He notes that just figuring out why there are the interoperability problems is taking up a lot of staff time.

"If it were just three people managing five servers that would be one thing, but if it's 50 servers and four people, that's another," he adds.

Burton Group's Hein says this goes to the heart of the debate. "With OpenSSH there's no such thing as a free lunch. You're going to pay for an employee to do the work of service and support. This is the major obstacle to open source," he says.

While the OpenSSH freeware from the OpenBSD Group gets high marks from users, the companies that specialize in commercial SSH software say their products bring more to the table than simple SSH support between client and server.

SSH Communications Security, for example, recently began shipping its first security-management product, called SSH Tectia Manager, that includes a database for tracking changes to SSH configurations, auditing capabilities, policy updates to servers and centralized management for deploying the agent software. VanDyke Software also has a range of commercial SSH products.

This extensive management capability is not available even in the well-respected OpenSSH freeware, notes SSH Communications CEO George Adams.

Another difference in using commercial SSH code relates to security patching. All software could have vulnerabilities waiting to be discovered, but when they are, the vulnerabilities found in open source freeware might not be the same ones as those in commercial products because of intrinsic differences in them.

Whether using SSH freeware or commercial products, an important fact about SSH to keep in mind is that SSH 1.0 has been determined to be a flawed security protocol. SSH 2.0, expected to be finalized by the IETF this spring, has been widely used for several years and is the preferred mode for SSH.

Stephanie Schiebert, senior engineer at SSH Communications, says Version 1.0 is widely known to use a flawed process of data-integrity cyclic redundancy checks that are subject to modification in transit. That means data using SSH 1.0 can be intercepted and changed. "It's fairly easy to do," says Schiebert, noting that CERT in its security advisory 253-09 back in 2001 warned against SSH 1.0.

Because router vendors such as Cisco keep including SSH 1.0 as a default "it makes it harder to get rid of it," Schiebert says. "A lot of people don't understand the need to upgrade."

Like VanDyke, SSH Communications has been pressed by customers to include SSH 1.0 in some of its products because it lives on in network equipment. The security firm has included SSH 1.0 in some of its client SSH software, but refrained from including it in its server software products. "It's important that administrators not have SSH 1.0 on the server," she notes, because it's simply a poor security practice. ■

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BackSpin Mark Gibbs

Happy political messaging

Happy New Year! Or to put it another way, Gelukkige Nuwe Jaar (Afrikaans), Feliz Ano Novo (Brazilian), Gung Hai Fat Choi (Cantonese), Gelukkig Nieuw Jaar (Dutch), Bonne Année (French), Buon Capodanno (Italian), Kainourios Chronos (Greek), Próspero Año Nuevo (Spanish) or Ku Iye'dun (Yoruba). And for you scholars: Annum Faustum (Latin).

You might as well get used to seeing all of those languages and more, as this year you will be inundated with quantities of spam coming from non-English speaking spammers.

Last year was impressive for the rise in foreign spam with, at least from my viewpoint, Russia generating the most. I particularly enjoyed the endless spam from a pizza parlor in Moscow that appeared to offer me the opportunity to call them to deliver what looked rather like a decaying slice of car tire.

But there's another language that we'll have to get used to in the coming spam flood: Politicalese. Yep, it seems that politicians believe it is an inalienable right for us to receive whatever they want to send.

Despite the passage of the mind-bogglingly naive and politically self-serving CAN-SPAM act, members of Congress are not subject to the same law — the act only applies to unsolicited commercial e-mail and not to unsolicited political e-mail.

According to the rules of the House, the Franking Commission has to approve any taxpayer-funded mass snail mailing sent by a member of Congress to more than 500 constituents. (You didn't know that you pay for their postage? You do.) Another rule is that there is a blackout on bulk snail mailings for 90 days before an election — a period that is crucial for building electorate awareness in a campaign.

Now when e-mail arose as a political messaging medium these same rules were applied. But in September 2003, the House Administration Committee voted that bulk e-mails could be sent without approval of the Franking Commission and could also be sent in the blackout period but only to subscribers of members' e-mail lists.

The reason for no longer requiring any approvals by the Franking Commission was, according to Brian Walsh, the Republican spokesman for the House Administration Committee, because it introduced "a delay of a couple of days ... we didn't feel ... was consistent with the technology that existed."

Hmm. A delay of a couple of days is unacceptable? Interesting. You'd think that compared with the slow grind of most government processes this delay in spamming should be the least of their concerns.

So now that there are hardly any controls on what Congressional bulk e-mailers can send out, we're going to see a flood of spam in our in-boxes as the members attempt to build their lists before Aug. 6, when the non-list spam and snail junk mail blackout period for the 2004 election starts.

A *New York Times* story claims that "at least 40 House members have bought or agreed to buy e-mail address lists from at least four vendors." Are House members worried about potentially adverse response to spam from their constituents? The *New York Times* notes that Rep. Brad Sherman (D-Calif.) is a list purchaser and quotes him saying that: "Our experience has been that we get hundreds and hundreds of people who opt in for every person who opts out ... E-mail has been a great communications device." Sherman, by August you and your buddies will have helped to change that to "E-mail *was* a great communications device."

A simple solution is needed that would make Congressional spam manageable for those who aren't interested in it. How about requiring that all political messages start with something like "[POLITICAL]" on the subject line so we could filter it out.

Why do I think that's not likely to happen?

Post Festum Pestum (that's Latin for "After the holidays, the plague"), it looks like it is going to be an Annum Spamis Maximus.

Translate your thoughts to backspin@gibbs.com.

Voices of networking

Newsletter authors make predictions for the new year.

Compiled by Jeff Caruso

Balls of crystal. *New Year's predictions are a time-honored journalistic tradition, one that several of our e-mail newsletter columnists observe every year. With Paul "Buzz" McNamara out on a short-term medical leave, we thought we would share some of those predictions in this space.*

The Convergence Newsletter tag-team of Steve Taylor and Larry Hettick must have eaten their Psychic Wheaties, for they list no fewer than 10 predictions for 2004. By their reckoning, it should be a good year for voice over IP (VoIP). Among their prognostications:

- "Internet taxation will not become an issue for the 2004 U.S. presidential election unless one of the candidates claims to have invented VoIP. However, the U.S. Supreme Court will be asked to hear a case to decide if voice over the Internet should be taxed. . . .
- "More than 30% of large companies will issue RFPs to scrap their existing PBX in favor of an IP PBX. . . .
- "Somebody will figure out a cool business application for sending pictures to cell phones. Then, somebody else will figure out how to block spam and pictures delivered to cell phones. And a clever employee will figure out how to use the cell phone picture mode to prove he's working even when he's not."

For the complete list, check out the Convergence Newsletter later this week by going to www.nwfusion.com/newsletters/index.html

SOHO Life's Mike Wolf concurs that VoIP will gain momentum in 2004:

"Sure, VoIP's been around for years. But you know something's up when Tom Brokaw talks about it on the evening news. IP telephony service provider Vonage continues to sign up consumers in droves and just introduced a low-cost package for about $15 per month. Incumbent carriers are scrambling to offer services, too. Cox and Time Warner Cable are also now moving to VoIP."

Messaging Newsletter author Michael Osterman zeroes in on spam:

"Spam will continue to be a problem for many companies, but the problem will wane from a practical perspective for most corporations because of the widespread deployment of good spam-blocking tools. To be sure, enterprise e-mail systems, as well as those of ISPs, will continue to handle a deluge of spam, but most end users will be relatively insulated from this onslaught. Consequently, the problems with spam will continue to be faced more by IT staff than by end users. . . .

The ISP News Report also addresses spam. For 2004, author Carolyn Duffy Marsan relates the predictions of Brownlee Thomas, telecom industry analyst with Giga Information Group:

"Thomas predicts ISPs will offer more bundled anti-spam and anti-virus offerings for small businesses and consumers. She also expects to see ISPs introduce more security services — particularly against distributed denial-of-service attacks — for their Web hosting clients. However, Thomas says corporate network managers will need to continue cobbling together their own anti-virus and anti-spam solutions using third-party software packages."

Mike Karp recently picked several "vendors to watch" for his **Storage in the Enterprise Newsletter.** They include Celion Networks, "for reducing costs associated with long-haul data transfer over fiber-optic cable"; GlassHouse Technologies, "a well-respected provider of planning services in areas such as storage strategy, business continuity, and back-up and recovery strategies;" and IntraDyn, which "makes a back-up and archiving appliance that contains everything a small and midsize IT environment should need to implement a sound back-up strategy."

James Gaskin also likes IntraDyn. As he wrote for his top prediction in the **Small Business Technology Newsletter:** "We'll see new back-up tools in 2004, but [IntraDyn's] RocketVault will be tough to beat." Plus, Gaskin says all-in-one appliances will improve and will increase in popularity at the expense of Microsoft and Novell small business products.

Caruso is the managing editor of online news.

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